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The University of Alberta

Development and Evaluation of a Parent and Preschool Aquatic Educational Seminar

by

Jennifer E. S. Collins

A Thesis

Submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the Requirements for the
Degree of Master of Arts
in Recreation

Department of Recreation and Leisure Studies

Edmonton, Alberta

Fall, 1990

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled " **Development and Evaluation of a Parent Preschool Aquatic Educational Seminar**" submitted by Jennifer E. S. Collins in partial fulfillment of the requirements for the Degree of **Master of Arts.**

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To my parents,

who taught me

you must believe to achieve.

ABSTRACT

This research investigated the effects of participation in a supplemental parent education seminar in preschool aquatics, on parent knowledge in preschool aquatics. A literature review demonstrated that although many researchers and practitioners advocate the inclusion of parents in preschool aquatic programming, little research exists on the delivery of parent information and its effects on the participants. The research employed a 2 (treatment condition) x 3 (aquatic facility) x 3 (time) repeated measures design. Fifty-seven volunteer subjects (54 females, 3 males) were assigned to either a treatment or control group. The treatment consisted of 2 - 45 minute sessions held on two consecutive days prior to commencement of the regular program. The content included preschool aquatic program goals, objectives, preschool principles and relevant early childhood development literature which was based on the policy statement "Water Activity for Young Children" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). All participants completed a questionnaire prior to and following the preschool program. The questionnaire consisted of a series of questions using a seven point Likert-type scale format. It assessed knowledge pertaining to Child Development, Play, Water Orientation, Parent Supplemental Information, Parent/Instructor Roles and Competence.

A multi-variate analysis of variance determined significant treatment x time interactions in two of the selected scales - Child Development Knowledge ($p < 0.001$) and Play ($p < 0.008$). No other treatment effects were found for the other variables (Parent/Instructor Roles, Supplemental Parent Information and Competence).

The findings suggest that child development information when included as part of a preschool aquatic program changes parent knowledge. Future research challenges addressed included alternative methods of seminar presentation and implications for instructor training.

KEYWORDS: Parent Education, Preschool Aquatics

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CHAPTER 1 - INTRODUCTION

Introduction

Swimming is one of the most popular recreational activities in North America. The ability to swim has been recognized as more than an activity in its own right. It is, as well, a foundation skill necessary for safe enjoyable aquatics.

Preschool aquatic programs have become increasingly popular over the past few decades as thousands of young children are taken to local facilities "to swim". Parents have been inspired by visions of creating a "water baby" through programs that claim to 'drownproof' or 'water-safe' the baby (Burd, 1986; Penny, 1985). It is estimated that over 90% of all aquatic facilities have developed programs to meet the increasing demand for preschool aquatic programs (Hick-Hughes & Langendorfer, 1986).

Child development studies have demonstrated, however, that children up to three years of age are not capable of learning formal swimming skills and strokes due to inadequate neuromuscular development (Shank, 1981). The Young Men's Christian Association [Y.M.C.A.], the Canadian Red Cross Society [C.R.C.S.], the Canadian Paediatric Society [C.P.S.] and the Canadian Medical Association [C.M.A.] (1976) issued a joint statement indicating that formal instruction was not appropriate for the birth to five years age group since "instruction requires attention, motivation and language abilities not present in very young children"(p. 3). Most agencies offering such programs appear to have been sensitive to the needs of the young child. Preschool programs have generally differed considerably from the

regular swim programs for school age children. One of the main differences in the two types of programs has been the inclusion of parents in the programs for the young child. Hick-Hughes and Langendorfer (1976) in a study of 129 facilities found that 84% of all programs had parents involved in the water with their children under the age of three.

Many authors agree on the advisability of including parents in preschool aquatics programs (Kelly, 1982; Penny, 1985; Smith, 1977; Stinson, 1981). The National Y.M.C.A., the C.R.C.S. and the C.P.S. (1976) in their joint policy statement advocated the inclusion of parents in preschool aquatic programming. Such involvement places the parent in the role of teacher. It is the parent that guides the child through the program. The instructor gives directions to and acts as a resource and guide-helper for the parent. This system allows a trusted adult to provide the guidance and assistance to the child (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976).

A programming approach that utilizes parents as teachers is based on the assumption that parents provide the care and security for the child and that they have the proper knowledge and competence to facilitate the child's aquatic experience. Unfortunately, it cannot be assumed that parents who enroll in a parent and preschool program will possess the appropriate knowledge of aquatic progressions and program objectives, in addition to having the aquatic competence required to create the positive learning experience necessary for themselves and their children. Parents may have different reasons for enrolling in a program and may have expectations that differ from the individuals administering the program - namely the facility programmers and the instructors.

A national survey conducted by the C.R.C.S. (Penny, 1985) demonstrated that parent (N = 160) expectations of preschool programs did differ from those of facility managers (N = 80) and instructors (N = 160). In the survey, the respondents were asked to state the main purpose of a preschool program. Facility managers and instructors suggested that water orientation was the main purpose (64.29%) while parents suggested that water orientation (44%) and skill development (30%) were both high in importance. These results indicate that some parents do not have the same program expectations as do the individuals involved in the development of the program.

Principle # 5 of the Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. joint policy (1976) addressed the need for parent education in regards to preschool aquatic program objectives. It stated,

> *Any organized program must include a parent, or other adult trusted by the child, who must receive a pre-program briefing in the aims of the program, relevant developmental information regarding young children and appropriate safety and health information (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976, p. 3).*

In a descriptive study of 129 facilities, Hick-Hughes and Langendorfer (1986) found that 95% of respondents included water safety procedures within their program design. The provision of relevant child development information and briefing of program aims to parents was not addressed in the study nor was it ascertained whether or not the water safety procedures were implemented as part of a pre-orientation for parents. Despite a call some fifteen years ago to aquatic professionals for pre-program orientation sessions for parents (Smith, 1974;

Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976) there remains a lack of information to indicate action in this area.

There continues to be a need to develop and implement a pre-program briefing for parents on the aims of preschool aquatic programs, including relevant child development information and appropriate safety and health information. Such a briefing might increase a parent's understanding of the purpose of the programs and assist in clarifying the agency's expectations of the parents and their children.

Purpose of the Study

The purpose of this study was to develop a parent education seminar and to field test its impact on parents involved in preschool aquatic programs. The education seminar was a pre-program session based on the Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., (1976) joint policy agreement on "Water Activity for Young Children" and current relevant child development literature. The seminar was presented to the parents of preschool children enrolled in preschool aquatic classes. An evaluation was designed to compare the knowledge and competence of parents who had received the seminar to parents who had not participated in the seminar. More specifically the evaluation was designed to:

a) compare the knowledge of parents who had participated in an education seminar with those of parents who had not participated in such a seminar. The knowledge assessment related to the parents' demonstrated understanding of the development of children and the benefits of early aquatic experiences for children.

b) compare knowledge, pertaining to the preschool program objectives, of parents involved in an education seminar with those of parents who had not participated in such a seminar. This knowledge assessment dealt with the parents' perception of the purpose and intended outcomes of the preschool aquatic program and their understanding of their role and the instructor's role in such programs.

c) compare the perceived instructional competence of parents who had participated in an education seminar with that of parents who had not participated in such a seminar. The perceived instructional competence measure focused on the parents' perceived self-competence in their ability to guide their child's aquatic experience.

In order to analyze the three comparisons the following research hypotheses were formulated:

1. Parents who participated in an education seminar would demonstrate a greater understanding of child development and the implications of development for a child's ability, or inability, to learn to swim, than would parents who did not receive such training.

2. Parents who participated in a parent education seminar would express a higher acceptance for the benefits of play as a teaching approach for children than would parents who did not receive such training.

3. Parents who participated in a parent education seminar would express a higher level of acceptance of the benefits of water orientation, as an objective of the program, than would parents who did not receive such training.

4. Parents who participated in a parent education seminar would express a higher level of support for supplemental parent education information than would parents who did not receive such training.

5. Parents who participated in a parent education seminar would express a greater understanding, congruent with the focus of this program, of their role and the role of the program instructor in guiding the aquatic experience of their child than would parents who did not receive such training.

6. Parents who participated in a parent education seminar would express greater perceived self competence in their ability to guide their children's aquatic play experience than would parents who did not receive such training.

Limitations

1. The City of Edmonton parent and preschool aquatic program was utilized for the water sessions of the study and therefore program titles and session duration dates were set by the respective City of Edmonton facilities. Facilities were screened prior to selection to ensure consistency in the City of Edmonton facility program philosophy and the parent information seminar content.

Delimitations

1. The parent information seminar was developed based on the theoretical framework of the joint policy statement "Water Activity for Young Children" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976).

2. The study was designed with the information being presented in a pre-program seminar format and the results cannot be generalized to any other parent education setting.

3. A competitive swimming pool design was selected for the study and the results exclude special facilities such as teach-pools, wave pools, or wading pools.

4. Instructors of the water sessions were City of Edmonton female employees, selected by their respective facility programmer, who met the criteria of being childless and who had no more than two years experience teaching preschool aquatics.

5. Water sessions were held during the summer session with classes being held for one half hour daily, Monday through Friday for a two week period.

6. The sample of parents was delimited to volunteers who had already enrolled in a parent and preschool aquatic program. Intact parent groups were utilized with groups being assigned a treatment condition.

Definition of Terms

The following definitions were accepted for key terms in the study.

Control Condition - the condition under which the control group participated in the study. The control condition included ten 'in the water' sessions with the children. The control group completed the repeated measures questionnaire three times throughout the study which provided a strong control condition.

Experimental Condition - the condition under which the experimental group participated in the study. The experimental condition included the two day

seminar and ten 'in the water' sessions with the children. The experimental group completed the repeated measures questionnaire three times throughout the study.

Knowledge - the parents' familiarity with the information on child development and preschool aquatics as presented in the education seminar.

Motor Development- the process through which a child acquires movement patterns and skills. (Malina, R., Moore, S., & Cathrine R., 1982, p. 212).

Parent Education Seminar - the classroom sessions implemented as the treatment for the experimental group in the project. The education seminar included current, relevant early childhood literature in the areas of physical, motor, cognitive and play development in relation to aquatics.

Perceived Competence - the parents' subjective perception of their ability to effectively guide the aquatic learning experiences of their children.

Play - a self perpetuated enjoyable activity characterized by a heightened level of cognitive processes (Atkey, 1984, p. 14).

Preschool Aquatics - aquatic programming for all of the age categories - infants, toddlers and preschoolers.

Self-initiated activities - activities which the child chooses to commence. Suggestions and demonstrations may be given by an adult, however the child must commence the physical engagement into the activity.

Swimming - voluntary body movements that purposefully propel the body through the water (Langendorfer, 1986). Movement may be in any direction but must have intentional progress which is replicable by the young child.

Water Orientation - a process of becoming emotionally and physically adjusted to the sensations of being surrounded by water (Shank, 1981, p. 8).

Water Safe - the ability to surface in deep water, obtain air and either swim to safety or stay afloat (Shank, 1981, p. 8).

Young Children- includes all of the following age categories:

Infants - birth to one year of age.

Toddlers - one to three years of age.

Preschoolers - three to five years of age. (Shropshire, 1987).

Theoretical and Practical Importance of the Study

Traub (1986), in a critique of the "better baby" trend writes, "the age of Spock is over ... in the world of baby care common sense has given way to competition and connoisseurship" (p. 57). In his article, Traub (1986) clearly criticizes the "better baby" phenomenon and cautions readers to refer to serious child development scholars like Piaget, Elkind and Spock. These writers do not endorse the baby improvement craze, rather, they deplore it for the pressure it places on the parent and infant psyche.

The field of aquatics has not been spared of public pressure to provide programs for the new "water baby". Public demand has resulted in, a multitude of programs throughout Canada and the United States. A survey of 139 facilities in the United States demonstrated that 98% offered programs to young children between the ages of 0-5 years (Hick-Hughes and Langendorfer, 1986). In Alberta it is estimated that over 90% of all facilities offer such programs (J. Slick, personal communication, January 30, 1986).

National aquatic agencies have demonstrated concern for preschool aquatic programming, and have debated particular areas of concern for over thirty years (Penny, 1985). In an attempt to provide the field with direction and guidance, aquatic agencies have cooperated to develop consensus on policy positions (C.N.C.A. 1984; Shropshire, 1987; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). The development of these preschool aquatic policy positions and guidelines have not, however been without great debate over opposing philosophical "camps". Some guidelines, as Traub suggests, have been based on the literature of serious child development scholars while others have not.

Despite the guidance offered by the joint policy position, a second issue that remains in preschool aquatics is the lack of direction and training to instructors in the field. In the joint policy it was recommended that instructors "acquire a basic understanding of the physiological, psychological and social needs of young children" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976), yet to date no specific instructor training programs have been developed. In Canada, instructors who are presently teaching preschool programs receive training that qualifies them to teach the Canadian Red Cross Pupil Trai Program, a program which is directed to children over five years of age. While some of this training is pertinent to teaching preschoolers, it is not totally adequate. Preschool aquatic instructors to be proficient, must supplement their present aquatics training with information on preschool children through other means.

Due to the increasing public pressure for preschool aquatic programs and the lack of consistent direction from the aquatic governing bodies, some facilities may

be running programs that lack a sound basis in early childhood development, with instructors who may not be adequately trained. Many of these facilities also failed to evaluate the effectiveness of the programs. This study has been developed to design a parent education seminar on preschool aquatic programming, based on early childhood literature and on sound instructional principles. An evaluation questionnaire was developed to determine the effectiveness of the program.

The primary purpose of the present study is that it provides the ground work for further study related to parent education and preschool aquatics. Although many researchers and practitioners advocate the inclusion of parents in programming and the joint statement (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976) has recommended a pre-program briefing for over fifteen years, to date no attempt at quantitative or qualitative measurement has been made in this regard. The present study was developed to quantitatively substantiate the above recommendation by the Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. (1976). There are two potential benefits of this study to the field of aquatics.

1) To provide a parent education seminar which is based on current early childhood literature. The seminar content utilizes the joint statement preschool principles (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976) and provides detailed information on the research from which the principles were based. The seminar will be available for the practitioners in the field to implement as a pre-program briefing for parents and a basis from which to develop instructor training programs.

2) To provide an evaluation tool for measuring parent education program effectiveness. The quantitative instrument will be available to

practitioners in the field to measure the effectiveness of the pre-program briefing so that future improvements in programming can be made.

CHAPTER 2 - LITERATURE REVIEW

A Preschool Aquatic Policy Position

Preschool aquatic programming has not been the subject of extensive study and knowledge development. The topic first appeared as a workshop session in the 1951 Annual Conference of the Council for National Cooperation in Aquatics (C.N.C.A.), an organization comprised of thirty-six aquatic agencies in the United States (Penny, 1985). In the later fifties, issues in the area of preschool aquatics centered around questions such as the minimum age for instruction, the use of floatation devices for instruction as well as the detrimental and beneficial effect of such programs to a child's physical health.

It was not until 1976, however, after twenty years of discussion that the C.N.C.A. published the Canadian position statement (Y.M.C.A., C.R.C.S., C.P.S., and C.M.A., 1976) on preschool swimming at its conference in Illinois (C.N.C.A., 1976). Unlike subsequent policy positions, this Canadian-developed statement was fully endorsed by the leading aquatic and medical agencies in Canada.

The joint policy entitled "Water Activity for Young Children" (Y.M.C.A., C.R.C.S, C.P.S., and C.M.A , 1976) was the first and most successful attempt at presenting a unified policy in regards to aquatic programs for young children. The document emphasized that the societies were not necessarily promoting or advocating preschool aquatic programming. Rather the purpose of the principles were to provide guidance, thus maximizing the chances that the involvement of children in preschool programs would be positive experiences (Y.M.C.A, C.R.C.S.,

C.P.S. and C.M.A, 1976).

This landmark joint document was extremely influential in the development of the policy statements that followed. The strength of the joint document was its sound research base in early childhood literature. This is the reason that the Y.M.C.A, C.R.C.S, C.P.S., and C.M.A, (1976) joint policy paper was selected as the basis for the parent education seminar in this study. With the exception of principle number six, the joint statement policies were accepted in full. Statement six reads:

The terms "classes", "instructor", "instruction" and "swimming" should not be used because common meanings are misleading and inaccurate when applied to preschool programs. Instead, the following terms or similar terms should be used respectively: sessions, guard-helper, guidance or assistance and water activity.

Although the parent education seminar supported this principle and addressed the rationale for such a principle to the parents involved, the researcher was not in a position to implement the desired technology due to the restrictions of studying in the field. Terms such as classes, instructor and lessons were used by the facilities involved, as had been each facility's previous policy.

The seminar discussed and presented information in the following topic areas related to the literature and the Y.M.C.A., C.R.C.S, C.P.S., and C.M.A. (1976) policy statement:

- Preschool Aquatic Program Objectives
- Play and Learning
- The Water Safe Child Fallacy

- Understanding Child Development
- The Role of the Program Instructor
- The Role of the Parent
- Medical Concerns

The relevant literature in each topic area will be presented in the following sections.

Preschool Aquatic Program Objectives

The main purpose of parent and preschool aquatic programming is to provide an enjoyable introduction and orientation to the water. This approach has received general support from the aquatic agencies and aquatic professionals in the field (C.N.C.A., 1984; Hick-Hughes & Langendorfer 1986; Kelly, 1982; Langendorfer, 1986; Murphy 1983; Penny 1985; Priest, 1983; Shank, 1983; Shropshire, 1987; Smith, 1974; Stinson, 1981). The philosophy was presented in the original set of principles "Water Activity for Young Children" which emphasized that the focus of the program must be on safe, enjoyable play where the young child is allowed to explore and experiment with the water environment as a means of enriching his or her life experiences (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976).

The approach of aquatic learning through exploration and play has been widely accepted as research indicates that "most children under the age of six, profit little from lessons or instructions in the sense that these terms are normally used" (Smith, 1974, p.96). Langendorfer (1986) writes in support of the philosophical change in aquatic program thinking from the previous "teacher centred" learning of strokes to

the present learning of watermanship; he states "probably young children learn to swim in spite of the teaching methods rather than because of them" (p.63). This is not to say that children cannot learn, for they learn very well but do so more effectively on their own through play situations without formal teaching (Smith, 1974: p.96).

Mead (1968) described the growing up of Manus children in New Guinea, where water became the children's playground as mothers washed laundry by the rivers edge. Mead observed that for the first three years the children showed very little interest in swimming, but by age five all were swimming well without formal instruction. McGraw (1935) found similar results in studies she conducted on the development of two twins. Johnny (one of the twins) learned to swim without instruction by being submerged with support of a strap. After ten weeks of daily submersions McGraw (1935) reported that Johnny, at ten months demonstrated an ability to swim without support but did so totally submerged to six inches below the surface. Jimmy, the second twin, was not introduced to the aquatic environment until a much older age. This result supports Mead's (1968) observation that young children given the opportunity to experience and freely explore their abilities in the water environment learn through their own exploration and play. Adult controlled formal instruction was not involved in either of the above cases, yet the children learned to move in the water.

There are some individuals who attempt to capitalize on the infant abilities demonstrated by McGraw by promoting formal swimming programs for young children. In response Smith (1974) writes, "there is no doubt that by skilful

application of the training procedures used for higher animals (such as dogs, horses, seals and other species seen at a circus), infants and preschoolers can be trained to swim in less than ten weeks of daily submersions" (p.97). Smith (1974) cautions however that in preschool swimming we are dealing with instructors who may lack the training required and more importantly an accurate understanding of the young human child. Langendorfer (1986) also criticizes the early training approach as it produces "not an athletic prodigy but an easily frustrated and poorly educated individual" (p.62).

One such "training" procedure for teaching infants to swim has been described by Barnett (1980). In his studies on infant swimming research Barnett describes his method of teaching infants and young disabled children through methods which are based on "operant conditioning, where air is used as a primary reinforcer and physical touch and security are secondary reinforcers" (p 18). The children are given directions through hand signals and their behaviour results are charted based on body movements. Understandably very few support this animal training approach to teaching swimming for the adverse affects it may have on the psyche of the young child.

The Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. 1976 joint statement, in an attempt to circumvent such training practices and to ensure that the emphasis of the programs was on safe, enjoyable play, advocated principle #1 which stated that "these experiences must be free of force, compulsion, punishment or threat (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). The position statement was developed so that programs might understand that a child's free play is spontaneous

and exists in absence of any external force, rewards or constraints. Studies have demonstrated that external constraints can undermine the original motivation of the child to play and may be detrimental to the continued occurrence of the behaviour (Lepper, 1981; Lepper & Green, 1975). Similarly Barnett (1985), in a study on the relationship between play and problem solving skills in children, found that children who were allowed to play freely without external constraints commenced a task faster than the children who were under other conditions.

In the aquatic environment, the external constraints placed on a child's play behaviour, usually in the form of task demands by parents and instructors, may have adverse affects on the skill development and learning of the child. As Smith (1975) states of parents and instructors who place too high an external task demand on the child,

> *"The child learns that whenever something comes up that is new and must be learned, the parents and instructor become anxious, pushy, and impatient. This causes the child to become anxious, confused, rebellious, panicky or apathetic. If this situation becomes common the child learns that when something new has to be faced a dangerous situation is created and he panics, is unwilling to take the risk, and is either unable to learn, or learns much less than he should" (p.11).*

In no other aquatic activity is this situation of panic more apparent that in the activity of submersion. The utilization of parent initiated (forced) submersion (Conn, 1987; Lomon, 1980) as teaching methodology by some agencies has become the center of great concern to national agencies. Priest (1983) criticises proponents of the concept that "if you submerge a child repeatedly it will eventually learn to

hold its breath in self defence" as irresponsible and dangerous. Arguments against this practice are based on the negative influence on learning, the long term psychological effects that might result from this trauma and the possible risk to health through ingestion of large amounts of water.

Langendorfer (1986) suggests that supporters of forced submersion techniques believe falsely that such practices are not dangerous since the epiglottal or "breathing reflex" prevents water from entering the lungs. He clarifies that although the epiglottal reflex indeed does exist and permits the child to swallow food without choking, it functions neither to control the amount of water swallowed or to prevent drowning. This reflex, like other infant reflexes, appears to follow a developmental course over the first half year of life and gradually comes under voluntary control. Regardless of whether the reflex is stimulated involuntarily or voluntarily in the older child, young children can ingest dangerously large amounts of water (Langendorfer, 1986).

Supporters of the forced submersion technique advocate this practice as they suggest that it will assist a child in case of accidental submersion. No studies however were found to support such a claim. On the contrary it has been reported that infant drownings have been reported to occur within six weeks after completion of a swimming program (Smith, 1974). It should be noted that it is not known what particular techniques for teaching submersion were employed in these cases. The joint policy statement clearly discouraged the practice of forced submersion in principle one, which stated that "the emphasis must be on safe, enjoyable play. These experiences must, therefore, be free of force, compulsion, punishment or

threat" (Y.M.C.A., C.R.C.S.,C.P.S. and C.M.A. 1976).

Finally to curtail the growth of highly commercial "better baby" water programs, aquatic agencies were quick to point out that there is no scientific evidence from either medicine or psychology to support the claim that "water experience produces any significant long-range physical, intellectual, or psychological advantages that could not be achieved through a variety of other experiences" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. 1976).

In contradiction to this point, Diem (1982) studied children aged four to six years who were exposed to swimming after two months of age and concluded that "swimming babies" as compared to their peer group demonstrated enhanced motor, social and psychological development. Langendorfer (1986) on the other hand was unable to demonstrate any early aquatic experience effects on enhanced development. The fact that studies have revealed that young children can learn unique motor tasks, such as climbing and building, but can learn these skills much faster at later ages (Winnick, 1979), emphasizes the need for further longitudinal studies of the effects of early aquatic experience on the total development of the young child. Such longitudinal studies are required to substantiate or refute whether there are any long-lasting benefits or detriments to "head-start" aquatic programs.

Play and Learning

Play has only become a subject of serious academic study in the past 30 years. Atkey (1984) and Sutton-Smith (1983) comment on the increasing number of human development and psychology books and articles on play. There is no doubt that play

has evolved to be an area of research in its own right (Sutton-Smith, 1983) as well as an important area of interdisciplinary research. The early neglect of play reflected science's early perception and definition of play as an unnecessary evil of childhood which was of little useful outcome to the player and of little value to the scientist (Ellis, 1973).

Those who value the importance of play in aquatics and especially preschool aquatics place emphasis on the importance of play to learning. The view that play is the activity of intelligence was discussed at some length by Piaget (1962). Through play Piaget concluded that the child adapts behaviour and modifies its environment through the processes of assimilation and accommodation (1962). Play was seen as a medium through which the young child learned about the world and the effect he/she had on it.

Bruner (1975) demonstrated play to be more successful than traditional training methods for learning to problem solve. The task of fishing a prize from a box that was out of reach was posed as a problem for a group of three to five year old children. The children were given two sticks and a clamp, as tools, which could be used to make a pole. The children were then divided into five types of training groups, and given different treatments before being presented with the problem. The first group observed an adult demonstration of the principle of clamping sticks together. The second practised fastening clamps on single sticks. The third observed an adult complete the entire procedure of making the pole, while the fourth was allowed to play with the materials. The fifth had no exposure to the materials at all. The results demonstrated that the play group did as well as those

who had observed the entire procedure and did significantly better than all the other task groups (Bruner, 1975).

In a replication and extension of the work by Bruner, Barnett (1985) found similar results with children's play and problem solving with puppets. Barnett found that children who were provided with the opportunity to physically assemble a puppet by playing with the pieces performed better than children who were not permitted to physically manipulate the toy during the training phase. Barnett concluded that the play benefits of self-discovery were restricted to the actual physical contact with the toys. This finding is important to the field of preschool aquatics, as a main objective of such programming is water orientation which includes becoming physically adjusted to the water.

Bruner (1974) discussed how early observation in combination with play, lead to skilled adult behaviour by chimpanzees in the task of catching termites. The entire adult skilled behaviour required that the chimpanzee strip carefully selected sticks, wet the tips with their mouths and insert the sticks into the termite hill. After waiting for the termites to adhere to the sticks, they would remove them from the hole and indulge in their insect treat. Baby chimps learned the art of "termiting" by playing. Beside their mothers they would play out portions of the termiting act, playing with sticks, selecting sticks for different size holes, licking the ends. Although their antics did not immediately result in the reward enjoyed by their mother, eventually these playful acts lead to the final act of the adult skill of termiting (Bruner, 1974).

Through playful practice of subroutines of behaviour, the elements develop and form into the skilled action of problem solving. The effectiveness of play as a mode of learning may be related to the reduced anxiety of having to achieve and succeed. Bruner (1975) explains this notion by quoting the Yerkes-Dodson law of psychology of learning, "the more complex a skill is, the lower the optimum level of motivation required to learn" (p.82). That is, being too aroused can interfere with the learning of that task. Play assists by de-emphasizing the goal of the task and may serve to reduce excessive drive thus enabling the young to learn more easily, and on their own terms, the skills they need later in life (Bruner, 1974;1975).

The importance of play as the vehicle for learning has been clearly documented in language development (Bruner, 1983; Moskowitz, 1978). Bruner's (1983) studies were based on observations of the playful activity of Peek-a-boo. The mother and child game developed from simple to complex as the game progressed. What is important is that the child learned to keep the deep structure of the game constant while varying the surface structure. The child learned to signal and recognize expectancies (Bruner, 1983). Similarly Moskowitz (1978) reported that children hypothesized rules about language, tried them out and then modified the rules based on the results. Sentences thus became more structured as more precise rules were enforced. The first two years of life are spent "disassembling the language to find the separate sounds that can be put together to form words and the separate words that can be put together to form sentences." (Moskowitz, 1978, p.94).

Moskowitz (1978) suggested that adults accept a child's "errors" as part of the normal language process. She emphasized that it was important for parents to

understand that when children make errors they were "producing sentences that were correct and grammatical with respect to their own current internalized grammar" (Moskowitz, 1978,p.106). Until the child's internalized grammar has matured, it may be difficult to demonstrate to the child that he/she is incorrect. The internalized grammar of a child is the way in which he/she not only learns language but also learns to apply the rules of language. In general, children tend to over-generalize a single rule before applying it more narrowly. Children speak in one word sentences before they speak in two word sentences (Moskowitz, 1978). In the one word stage, children are learning more than just the meaning of words; they are learning to develop hypotheses about putting words together in meaningful groups. Language development is a process of not only learning language, but also learning how to learn by the formulating and reformulating of internal hypotheses through playful exchanges (Bruner, 1983).

The general perception of play, therefore, has developed from an initial view of it being an unproductive, tolerated activity of children to the current perception of it being an extremely important and intricate process of learning. "Play is serious business indeed and the principle business of childhood" (Bruner, 1975, p.81) Parents within the study's seminar were introduced to the concept of learning through play by discussing personal experiences of their own child's learning and relating those activities to the process by which the child learned through play. To assist the parents in distinguishing a play activity and to help them facilitate the growth of a playful learning experience, the characteristics of play were outlined in the seminar. The characteristics were drawn from Garvey (1977), Smith (1986) and Yawkey and Pellegrini (1984) and were outlined as follows: pleasant and enjoyable,

spontaneous and voluntary, done for its own pure enjoyment, involves active engagement of the player and is free of external constraints. The session concluded by emphasizing that "play doesn't waste time, it guarantees learning" (Smith, 1975).

The "Water Safe Fallacy"

No person, regardless of swimming ability or age, can be considered truly "water safe". Experts unanimously agree that "the water safe child" is a fallacy (C.N.C.A., 1984; Diamond, 1974; Homan, 1974; Jones, 1980; Kelly, 1982; Langendorfer, 1986; Perez, 1976; Priest, 1983; Shropshire, 1987; Smith, 1974; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). Young children operate at more elementary cognitive and motor developmental levels and are therefore less likely to be water safe as compared to older individuals (Langendorfer, 1986). Fortunately most aquatic programs, with the exception of a few highly commercial programs (Anderson, 1978; Barnett, 1980), do not suggest that a child is able to gain the ability to swim, be drown-proofed or otherwise become water safe. In a study of 135 aquatic facilities, less than one percent used terms such as drown proofing, pool proofing, and water safe (Hick-Hughes & Langendorfer, 1986). Proponents of swimming lessons for waterproofing and water safeness have perhaps developed due to a misunderstanding regarding the infant swimming reflex which all children exhibit in the first few months of life. Some programs falsely claim that the child's natural swimming ability at birth is lost "if not practised" and retained (Conn, 1987, p.iv-1).

The swimming reflex was first identified over fifty years ago by McGraw (1935) in her landmark studies of child growth and development in identical twins. During the first few months of life, infants exhibit an array of involuntary motions or reflexes. McGraw (1963) after 445 observations of the aquatic behaviours of 42 infants (11 days to 2 1/2 years old) identified three phases of infant swimming. The first called reflex swimming included involuntary movements which were better organized than a newborn's crawling or stepping movements. The involuntary movements were so well organized that they would propel the baby through the water (McGraw, 1963). The second phase, disorganized activity, occurred after the first few months. The rhythmicity and organization of the previous stage dissipated by this stage. Movements of the extremities were of a struggling order and there was less control over breathing mechanisms and the infant often coughed and ingested water. The disorganized activity stage was viewed as the transition period between involuntary and voluntary activity movements. In the third phase, deliberate or voluntary movements, the infant's movements were well organized but less automatic than that of the reflexive phase. The extremities propelled the infant through the water with purposeful movements as the child developed a greater degree of voluntary control (McGraw, 1963).

McGraw (1963) believed that unless swimming was continued through the voluntary phase, the deliberate movements would be abandoned as the child matured. McGraw (1935) attributed Johnny's improvement in swimming performance to his continued participation in the aquatic activity during the voluntary phase as opposed to his twin Jimmy, who was not exposed to such experiences.

The involuntary movements of the infant, observed during the reflexive phase, have had an influence on the development of preschool aquatic programs. Some have considered the movements of this stage to be an instinctive swimming ability of the child. The highly commercialized programs which claim to teach children under six months to swim, define these reflex movements as swimming skills (Conn, 1987). The pertinent questions concerning this issue are: "Can these movements actually be considered swimming?" and "Does permanent transfer occur from the involuntary to the more intentional actions?" McGraw (1963) suggests with respect to the latter question, that the reflexes demonstrated in phase one are lost during the disorganized activity phase and never are totally regained. The fact that the other reflexes of the neonate, (e.g., the Morrow, rooting, sucking and walking reflexes), disappear permanently in approximately 2 to 6 months (Dworetsky, 1984;Mussen et al., 1979) would suggest that the reflexive aquatic movements of infants would also disappear when higher brain functions and learning take over.

The distinction between reflexive motion and swimming is an important concept for parents and instructors to understand. Programs offering aquatic sessions to children under six months of age should educate parents of the fact that their children cannot learn to swim as they have not developed the physical abilities and cognitive processes necessary to guide purposeful voluntary activity which would be considered swimming.

The ability to swim also includes the cognitive ability to understand the inherent dangers involved in engaging in aquatic activity and hence the knowledge of water safety. Young children lack this cognitive ability and may exhibit poor

judgement in dangerous situations (Penny, 1985). One argument against the participation of young children in aquatic programming suggests that teaching young children to swim actually contributes to the likelihood of drowning by providing an "attractive nuisance" (Homan, 1974). Reports of infant drownings which have occurred within the six weeks of learning to swim (Smith, 1974), would seem to support this contention. As Kelly (1982) suggests, parents of the "water baby" may be provided with a false sense of security as it is the parent's responsibility to ensure the child's safety around the water. Parent water safety education has therefore been advocated for preschool aquatic programs by the Y.M.C.A., C.R.C.S. and C.N.C.A. for more than 15 years. The preschool child's lack of judgement is a justification for the importance of parent education. It is the parent's responsibility to ensure the personal safety of the young child. This fact, together with information on safety awareness, was presented in the parent education seminar.

The joint document "Water Activity for Young Children" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976) recognized the possibility of a preschool child learning to swim just as young children learn other complex motor skills such as walking and throwing. The document, however, cautioned parents and instructors to remember that children all grow and develop at different rates and learn motor skills at individual rates (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). In order for parents and instructors to understand and utilize such a concept in their aquatic activities, it is important to provide a general understanding of the principles of development and how they apply to aquatic learning.

Although young children at one time were simply considered to be miniature adults, it is now recognized that they differ greatly from adults (Smith, 1986). From conception to birth the head is the fastest growing portion of the body. At birth it is 70% of its adult size and constitutes one quarter of the length of the body (Dworetsky, 1984; Mussen, Conger, and Kagan, 1979). Physical development follows a gradual and orderly process that is delimited by genetic factors. The pace at which a child develops correlates nicely with the child's adaptability to the world around him (Smith, 1986). Each child develops according to a set of predictable developmental stages. The timing, however, through which the child progresses and the duration taken at each stage is not predictable (Gallahue, 1982; Seim, 1983; Smith, 1986; Smith, personal communication, March 3, 1986). The concept of "development by stages not ages" has created a dilemma in the aquatic field as programmers query over the appropriate commencement period for the young child to enroll in aquatic activities. Slick (personal communication, January 30, 1986) recommends the criteria of infant head control at approximately 6 months. Langendorfer (1985) suggests an age of between 12 to 18 months as this time period corresponds with the onset of independent walking and therefore represents a time period more consistent with motor development. It is obvious that an arbitrary "starting age" is not appropriate for establishing a criteria for commencement of an aquatic activity (Priest, 1983).

Priest (1983) suggests that aquatic personnel recognize the hypothesis of periods of "readiness" so that children commencing participation in a program may differ greatly in age but are similar in physical, social, emotional, and motor readiness. The readiness hypotheses was based on an individualist approach to

development. An individualist approach recognizes that development is a result of interactions between genetic predispositions and environmental experience. "Without some genetic predisposition, the most vigorous teaching (environment experience) can never produce skilled movement" (Langendorfer, 1985, p.64).

The joint Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. statement (1976) accepted the readiness hypothesis. It did not suggest an arbitrary start date to commence participation. The C.R.C.S. (Shropshire, 1987) policy statement emphasized aquatic readiness of both the child and the participating parent, "It is important that parents feel confident that both they and their children are ready for the aquatic experience" (Shropshire, 1987). Smith (1974) suggested that an adult who feared water could clearly communicate that fear to the child verbally or non-verbally and recommended a pre-water session for adults prior to the first session with the child. He further suggested "In the event that the mother cannot substantially master her fear then she should have another trusted person take her child into the water. Failing that, she should wait until she has developed reasonable confidence in the water" (p.97).

For the purpose of the parent education seminar the term "maturation" was defined as the general biological changes through which all children progress. These changes permit a psychological function to appear given the proper environmental conditions (Bower, 1982; Dworetsky, 1984; Mussen, Conger & Kagan, 1979). Practice and exercise are limited by maturation and parents and instructors must realize that the infant has to be prepared to learn the skill. Maturation transcends skill development and growth. It must be present first (Kagan, 1984). If a child is

ready to learn a skill then environmental influences modify both the pace and the quality of learning (M. Smith, personal communication, March 3, 1986). Consequently, the teaching of physical skills to children should proceed from the simple level of the skill to the complex mature stage, as maturation is established.

The most familiar examples of the simple to complex skill development pattern of children is the creep, crawl, stand supported, stand alone, walk and run to arrive at the mature skill of adult walking and running (Smith, 1986). Within the parent education seminar, parents were asked at what age their children began to walk. Responses ranged from 9 months to 17 months. This point demonstrated to the parents that the children developed in stages not ages.

Smith (1986) cautioned parents and instructors not to use the "mature form of the skill as the standard against which to compare the earliest attempts of the skill". A child will perform the skill in the early stages inaccurately or incorrectly in the eyes of a 'casual observer'; however, the child cannot avoid passing through the developmental stages. Parents must instead allow children to make errors suitable to their developmental stage while offering encouragement and support during playful practice.

Similarly language development proceeds from the simple to the complex as maturation sets the stage for growth. Chomsky (1969) presented a biological theory of language development which suggested that humans possessed an innate mechanism for language called a language acquisition device (LAD). The system provides the child with an ability to process the language heard, to construct rules and to generate appropriate, grammatical speech.

Bruner (1983) discussed the influence of maturation on the development of the LAD. He argues that LAD could not function until the child possessed the minimal mental capacity necessary for the foundation of the use of language. It is in the prelinguistic communicative settings that the foundation for readiness occurs.

The maturation for language acquisition begins early in the relationship between the infant and parent as interpreting and negotiating between parent and child is the foundation for later acquisition of grammar and meaning. The early relationship of the parent and child's negotiation of intentions was labelled the language acquisition support system (LASS) and was a system without which the LAD could not function (Bruner, 1983).

Bruner (1975) cited an example of this important negotiation in development through a description of an exchange game between an infant,"Nan", and her mother.

> *She offers her mother an object, withdraws it excitedly, then hands it over and says "Kew", her version of "Thank You". She does not say "Kew" when she herself receives an object. Nan has not yet learned the adult language code for giving and receiving. [the mother accepts the error and does not expect the mature form of "Thank you".] Three months later, "Look" has replaced "Kew" in the giving phrase of the game, and "Kew" has moved to its correct position in the receiving phrase.*

Smith (1986) cautions parents and instructors against criticizing a child for not performing the skill correctly. "This often turns children against both the activity and the adult who is providing the criticism and punishment for not doing things and learning fast enough" (p.6).

The relationship between the maturity level of the infant and the social environment of the developing child is an important aspect in learning. Parents must provide a comfortably stimulating milieu in which to enhance the child's development at various stages of maturation (Iso-Ahola, 1980). Dennis and his associates (1957, 1960) reported that, in an orphanage in which sensory, auditory and visual experiences were deprived, children showed a reduced capacity to interact with their environment and thus demonstrated retarded locomotor performance.

Within the parent education seminar, parents were introduced to the readiness hypothesis of development and were given opportunities to discuss their children's abilities and personalities. The seminar identified this philosophy and encouraged parents to provide the most stimulating learning environment for their children.

Medical Implications

A common question pondered by parents and programmers is "at what age should a child commence participation in a preschool aquatic program"? The Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. (1976) joint policy supported the C.R.C.S.'s official policy that "regular instruction in swimming and water safety, not begin until the child is six years of age" (p.2). The joint policy clarified this position by indicating that "regular instruction" referred to a formal "instructor-class" structure and that water experiences for children under age six were appropriate when they provided a safe, enjoyable introduction to water on a one-to-one basis. Other organizations set the minimum recommended starting age for organized swimming instruction at age 3 (Schaffer, 1970; C.N.C.A., 1984).

The demarcation of a three year old start age stems from reports that younger children may be susceptible to medical problems as a result of their involvement in aquatic activity. The medical implications reported in the literature relate generally to the young child's susceptibility to infection and disease.

The young child's underdeveloped immune system was identified as a concern by Homan (1974), Priest (1983) and Schaffer (1970). It was felt that it would leave them more prone to illness, diseases and viruses which could be spread in the water. One such infection mentioned was a parasitic infection called Giardiasis. Giardiasis, which may be transferred by feces, causes extreme chronic diarrhea in the young child. Priest (1985) reports that the most common programs to report such problems are pools with a high use of un-toilet trained children. Recommendations for aquatic facility preventive safety maintenance include maintenance of proper operating procedures including adequate levels of residual chlorine, pH balance, sufficient circulatory turnover rates, and regular water volume replacement schedules (Langendorfer, 1986). In addition, public education programs which would encourage parents to refrain from participation when their children were ill with chronic diarrhea or other illnesses would assist in the prevention of transmission to other children.

The inability of the very young child to control its body temperature through shivering is another medical concern identified by Edmonds (1983). Young children lack the mechanism for shivering that is used to generate heat. The potential danger for hypothermia and the reduction of the core body temperature is important when dealing with preschool children. Facilities offering programs to preschoolers should

maintain water temperatures within a range of 26 to 30 degrees Celsius (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976).

Low pH levels may cause eye irritation and coneal epithelial swelling in both the adult and the young child. This condition has not usually been associated with long term problems and can be reduced by refraining from immersing the eyes while participating in the aquatic activity (Edmonds, 1983).

The medical concern that has received the most attention is Hyponatremia, or water intoxication (Penny, 1985). Hyponatremia is caused by rapid ingestion of large quantities of fresh water that produces a physiological disturbance of the body's electrolyte balance. Symptoms include lethargy, vomiting, increased urine output, convulsions and brain swelling (Edmonds, 1985). Although only recently attributed to swimming programs, the medical profession has recognized the problem for a long time and associated it with over-feeding of sugar water to infants. Reports in the literature linking this condition to preschool swimming programs are rare but nevertheless are an important consideration for programs which advocate involuntary submersion (Penny, 1985; Priest, 1983). Principle number one of the joint statement clearly discouraged the practice of forced submersion in stating that "experiences must be free of force, compulsion, punishment of threat",(Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). Programmers, instructors and parents must refrain from performing forced submersion techniques and be aware of the first signs of increased water ingestion which include bloated stomachs, crying, lethargy, irritability, etc.

In summary, although there are potential medical risks and health issues related to young children being involved in aquatics, there has been no evidence to strongly indicate that it is unsafe to give very young children an early aquatic experience (Shropshire, 1987).

The Parent And Instructor

The inclusion of parents in preschool aquatic programs was recommended 14 years ago in the joint policy statement (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). Parent involvement was justified on the reasoning that parents were responsible for the personal safety of their own child in, on and around the water. The purpose for parent involvement, however, extends beyond strictly safety reasons. Parents of the program play an intricate part in the aquatic orientation experiences of their children.

A parent's role, then, extends beyond the role of safety patroller to that of guider or teacher of the experience. The program instructor is the one who provides direction to the parent, who then works with the child. In support of this approach, Kelly (1982) stated that "the emphasis of the instructor as facilitator format is that the parent is responsible for the total growth of the child. The parent and child grow together" (p.C5). Support for the parents involvement as program experience guiders is generally supported by aquatic agencies and is evident in many policy position papers (C.N.C.A., 1985; C.R.C.S., 1987; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1974).

The concept of parents as guiders stems from the research related to the way in which children learn. Research and experience both indicate that children under the age of four years and some up to the age of six years profit little from instruction in the normal sense of the term. This is not to say that children do not learn. On the contrary, they learn a great deal and some are exceptional learners. However, it is difficult to teach a young child something he/she does not want to learn and it will probably be more difficult to teach him/her in a class or group setting (Smith, 1972; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). It is for this reason that the joint policy recommended that the terms, "classes,instructor,instruction and swimming should not be used because common meanings are misleading and inaccurate when applied to preschool programs" (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976, p.2).

The role of the parent, therefore, becomes crucial to the aquatic development of the child as the parent and child work closely together. Similarly in language, Bruner (1975) closely observed the interactions between the parent and the child. The role of the mother (parent) is crucial in language development as language acquisition requires joint problem solving by the mother and infant. Bruner (1975, 1983) observed that the parent's important role in language development is to guide and shape the child's speech from the very simple to the complex level. In the earlier stages when producing a new label for an object, the parent was accepting of the infant's inaccurate and generalized rule of association. Later, the parent begins to hold out for more accurate speech to guide the development to a higher level. The function of parent as "sculptor" is an extremely sensitive role, as enforcing too stringent a definition on the new variations could destroy the "artwork".

In support of this perspective Carew, Chan, & Halfer (1976), in a study on the "dimensions of the environment that are good for babies", found that "babies who were most competent had mothers who were good organizers, arrangers and shapers of infant experiences and routines" (Honig, 1979). Mothers of competent babies observed their child's interests and then gauged their responses and activities accordingly acting as facilitators and teachers. These reports support and justify the philosophy of parent participation in preschool aquatic programming.

In aquatic programming, however, the approach which utilizes parents as teachers is based on the assumption that parents have the proper knowledge of program objectives to facilitate the child's aquatic experience. Unfortunately, it cannot be assumed that parents who enroll in a parent and preschool program will possess the appropriate knowledge and philosophies about the program to create the necessary positive learning experience for themselves and their children. As previously discussed parents have been shown to have different motivations for enrolling in a program and have been found to have different expectations of the purpose of the program than the individuals administering the program (Penny, 1985).

Instructors must, therefore, become an integral part of the process as it is their role to facilitate and assist the parents to adopt the desired program goals. The term 'instructor' is not utilized in the normal sense of the word for this type of programming. Rather the instructor acts as a guide-helper to the trusted parent (Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). After the guide-helper has acquired the trust of the individual child concerned, assistance to the child may become more

direct. This direct contact can only be truly achieved if the instructor or guide-helper has "a basic understanding of the physiological, psychological and social needs of young children" while possessing a warm, caring attitude toward young children (Shroposhire, 1987; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976).

In summary the parent education seminar content was developed from the Y.M.C.A., C.R.C.S., C.P.S. and C.M.A. (1976) joint policy statement. This policy position was the first comprehensive statement to be based on sound early childhood literature and to receive an overwhelming support from Canadian aquatic and medical agencies. The present review of the literature reveals that this document still remains the best set of policy statements to date. The parent education seminar evaluation was designed to investigate the parents' knowledge in the areas of early childhood literature and preschool aquatic program objectives and the joint policy statement was the conceptual construct from which the seminar and test instrument were based. Chapter three will outline the design and analysis that was used to investigate the effect of the seminar on the parents.

CHAPTER 3 - RESEARCH PROCEDURES

The Sample

The subject sample was developed from a list of volunteers who registered in the programs selected for the study. At the time of registration, subjects were not aware of the research project, nor were they aware of the type of treatment that had been assigned to their class. The subjects were called within a week of commencement of the project and were asked to participate in the study. A total of 57 adult subjects, 54 females and 3 males, whose average age was 32.6 years, were selected for the study. The subjects' children (N = 57) included 32 males and 26 females whose average age was 29.5 months. They ranged in age from 4 months to 48 months.

Subject mortality was a concern with the present study as only forty four of the original 57 parents completed all aspects of the program. Subjects who did not complete the treatment were contacted by telephone. Explanations for program incompleteness included: nine illnesses, three had moved with no forwarding address and the last was personally affected by a tornado that affected the northeast area of Edmonton in 1987.

In conducting the present study the assumption was made that the experimental and control groups would be similar in profile. Subject profile information was collected at commencement of the study and included information on the following: sex, occupation, spouse's occupation, number of children in the family, education, relationship to child, respondent's swimming ability, respondent's

preschool aquatic experience, child's sex, child's age, position of child in family order and child's previous aquatic experience. Chi-square tests were conducted to determine if the two groups differed on any of the variables and no significant differences were found in the analysis.

Procedure

The aquatic programs selected for this study were chosen from the City Of Edmonton Parks and Recreation Parent and Preschool Program. Permission to use the City's programs was obtained from the Director of Leisure Centres, in March of 1987. The researcher then interviewed program coordinators of eight of twelve facilities prior to selecting the three programs for inclusion in the study. The facilities selected were based on three primary criteria: 1) the physical design of the facility, 2) the size of the preschool program,and 3) the philosophical basis of the facility's preschool program.

Facility design was an important selection factor as swimming pools have varying depths and accesses which are differently suited to the needs of preschool programs. The traditional "competitive pool design was chosen for the study to allow for greater generality. All pools selected had a 3 foot shallow-end depth, rectangular shape, and ladder entry.

The size of the facility's preschool program was an important criterion in order to ensure an appropriate sample size for both treatment groups. One facility which was originally selected was later deleted due to its low registration.

Finally each facility was selected on its program's philosophical basis. The programs were carefully scrutinized to ensure that the facility's program curriculum was congruent with the content of the orientation seminar developed for the study. In particular, any program which condoned the use of adult initiated submersion as a form of teaching infants was deleted from the list of prospective study.

The subjects for the study were all adult members of classes held in the 1987 summer program during the months of July and August. All classes were held in the morning between 9:00 am and 11:00 am. At each facility classes under study were randomly assigned to either a control or experimental treatment. This random assignment within facilities provided an equal probability of a class being selected for the control or experimental treatment condition and ensured that each facility would have both types of groups.

In the original design, each facility was scheduled to have both control and experimental classes scheduled during the same session. However, due to low enrolment each facility had only one group operating per session. If the first session was selected to have a control group then the second session was automatically assigned to the opposite type of group. The research grouping assignments are presented in Table 1.

Table #1 - Study Location and Program Dates

Pool	Session Date	Grouping	# of Subjects
A	June 25 - July 6	Experimental	15
B	August 4 - August 15	Experimental	8
C	July 6 - July 17	Experimental	6
D	July 13 - July 24	Control	16
E	July 20 - July 31	Control	9
F	August 4 - August 15	Control	3

The Experimental Treatment

The experimental treatment consisted of two 45 minute seminar sessions with parents on the two consecutive weekdays prior to the children's initial participation in the water sessions. A seminar guide and curriculum was developed by the researcher for the study. The seminar content included program goals, objectives, preschool principles and relevant early childhood development literature. A film entitled "Trust in the Water", which was developed for the project in coordination with the Canadian Red Cross Society, Alberta/Northwest Territories Division, was viewed in the first seminar session. The film was targeted to parents and consisted of content developed from the joint policy statement which paralleled the content of the seminar.

The seminar leader was a Red Cross Consultant trained by the researcher to present the seminar, which consisted of a film, lecture presentation, overhead audio/visual material and informal parent discussions. The seminar leader conducted the treatment for all facilities with the exception of pool B where illness prohibited the seminar leader from completing the session. In the case of pool B it

was decided that the researcher should complete the treatment as no other alternative was found. All seminars were held at a local school in a classroom made available by the Edmonton Public School Board.

The City of Edmonton Water Safety Instructors who conducted the water sessions of the experimental group program were included in the seminar as observers. Both water session instructors and the seminar leader were blind to the research hypotheses.

Upon completion of the two day seminar, the experimental group completed the mid-test, then commenced participation in ten, one-half hour water sessions which were identical to the sessions presented to the control group.

The Educational Seminar

The educational seminar was developed by the researcher with content based on the policy statement "Water Activity for Young Children" (Y.M.C.A.,C.R.C.S.,C.P.S. and C.M.A., 1976).

As most of the writings in the field of aquatics are based on the individual experiences and personal philosophies of the practitioners in the field, the research based content of the seminar was taken from related areas of study. The seminar contained scientific study from the areas of language development, child motor development, plan and parent effectiveness education/training. These studies were then related to the qualitative writings in the field of aquatics.

A film clip discussion method of presentation was the instructional technique used in the seminar. Parents were presented information and then allowed to discuss the content based on their aquatic and non-aquatic experiences with their children. This method of presentation was selected for the study as it is a method utilized in parent training programs such as Parent Effectiveness Training (Gordon, 1975), Systematic Training for Effective Parenting (Dinkmeyers & McKay, 1976) and Children the Challenge (Dreikurs & Stolz, 1984). This method of presentation permitted parents to discuss the content and validate the information based on personal experiences.

The program objectives of the education seminar were:

1. To teach parents how to facilitate the preschool aquatic experience for their child.

2. To bring parents' expectations, knowledge, and competence in line with:
   i) the early childhood research.
   ii) the preschool aquatic program goals and objectives.
   iii) the Y.M.C.A.,C.R.C.S.,C.P.S. and C.M.A., joint policy statement (1976) promoting safe, enjoyable aquatics through a water play orientation. (Refer to Appendix B for the content of the parent educational seminar).

The Control Group

The control group participated in ten, one-half hour water sessions which were identical to those of the experimental group. The control subjects were not given any information from the seminar and were not gathered together as a group to

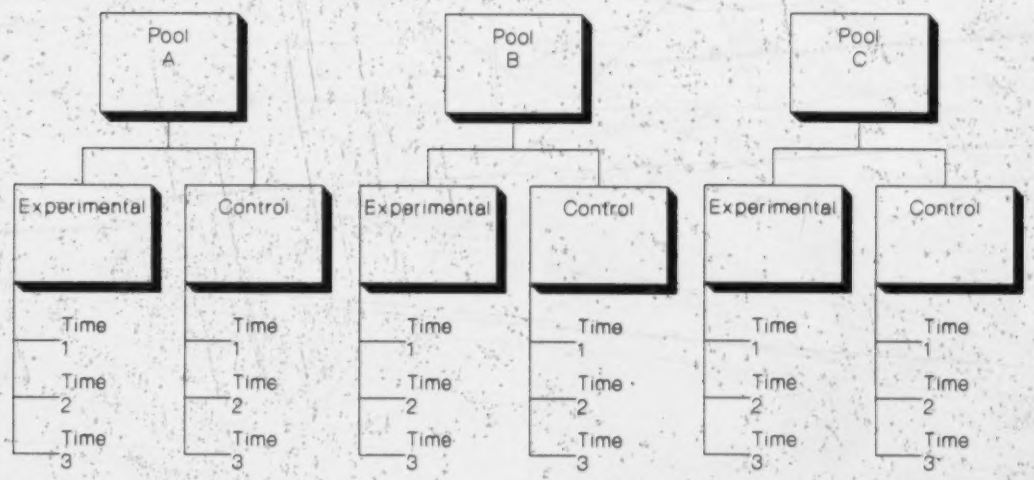
discuss the program. Subjects from both the control group and the experimental group completed the data collection questionnaire three times, once each during the first, second, and final lessons of the program. It should be noted that the control group completed the second questionnaire after having participated in two "in the water" sessions. This situation created a strong control condition as the subjects were not aware of the treatment group to which they were assigned and they were involved in an activity during the testing time.

The Research Design

The research design selected for the project was a 2 (treatment condition) x 3 (aquatic facility) x 3 (time) repeated measures design in which the subjects were nested within a treatment group at a facility (refer to Figure 1 for experimental design). Each subject was assigned to only one treatment in one facility and tested

Figure 1 - Experimental Design

Treatment (2) x Pool (3) x Time (3)



across three time points.

Volunteers registered in scheduled classes at each aquatic facility and then each class was randomly assigned as either an experimental or control class. A maximum of 20 subjects (ten for each class - experimental and control) were selected at each facility.

The Test Instrument

The joint policy statement "Water Activity for Young Children" (Y.M.C.A.,C.R.C.S.,C.P.S. and C.M.A., 1976) was the basis for both the seminar content and the instrument questions. The questionnaire utilized a seven point Likert-type scale format which measured responses from "very strongly agree" to "very strongly disagree".

The instrument was tested for face validity by two groups. In March 1987 the instrument was reviewed by professors from the Faculty of Physical Education and Recreation at the University of Alberta following initial revisions the questionnaire was reviewed in May 1987 by mothers who worked for the Canadian Red Cross Society in Edmonton and Calgary, but who were not associated with the Water Safety Program.

The instrument measured three general topic areas related to the seminar and preschool aquatic program. These areas included: preschool child development knowledge, knowledge of preschool aquatic program objectives and self-perceived competence with respect to ability to work with one's child in the water.

To check the reliability of the instrument, Kuder Richardson alpha scores (Ferguson, 1971) were calculated at each of the three test administrations. This reliability test compares the variability of scores between subjects to the variability between items. Alpha scores for the entire test were 0.71, 0.85 and 0.86 at time one to three respectively. Table 2 presents the results of reliability tests for each of the sub-scales of the questionnaire.

Table 2 - Alpha Reliability Scores for Sub-Scales

Scale	Time One	Time Two	Time Three
Child Development	0.69	0.77	0.80
Play	0.26	0.49	.041
Water Orientation	0.25	0.16	0.50
Parent Supplemental Information	0.53	0.42	0.73
Parent/Instructor Roles	0.51	0.58	0.81
Competence	0.81	0.82	0.83

In the original reliability test the scale for play demonstrated a score of -0.24, 0.39, 0.27, for test 1 to 3 respectively. Simple Pearson product-moment correlation coefficients were calculated between all single items in the play sub-scale. This analysis identified that statement 17, "Children under the age of four who are forcibly submerged are likely to ingest too much water", did not correlate well to the other items in the scale. Statement number 17 was therefore removed from the play scale and any further analysis.

Simple Pearson product-moment correlation coefficients were also calculated between all single items in the water orientation sub-scale. This analysis identified

that statement 21 "The primary purpose of this preschool aquatic program is to give the child an enjoyable introduction to water as a place to play", did not correlate well with statement #1 "The main purpose of this preschool aquatics program is to teach the child skills that lead to swimming" (r = -.15). Since the water orientation scale only consisted of three items and because of the extremely low reliability of this scale this variable was deleted from the study.

Beyond the play and water orientation scales, reliability was also rather low for the parent supplemental information and parent/instructor roles sub-scales. Therefore, caution must also be exercised in interpreting the results of these scales.

Analysis of the Results

The data was analyzed by a 2 x 3 x 3 multivariate analysis of variance (MANOVA) with five dependent variables. The five dependent variables were child development, play, parent supplemental information, parent/instructor roles, and competence.

The independent variables were: treatment condition which had two levels (experimental and control), facility which had three levels (pool A, B, and C), and time which had three points. In calculating the mead squares the Greenhouse-Geiser (Milliken, 1984) adjustment was employed in all cases where time was included as a factor, due to the repeated measures design. The adjustment is used in cases where the same subject is providing data and therefore scores are not totally independent. The adjustment provides a more conservative error term.

Since subject mortality was high and as a majority of those who had dropped out of the program had completed at least two tests, the best estimates for subjects with missing data were calculated in order to maintain a large enough sample size for meaningful analysis. The best estimates were found by estimating the least square means, of subjects with missing data. The estimate of the least square means was calculated through a formula which reviewed the fixed effects and random effects in the data (Milliken & Johnson, 1984). The assumption of the model is that once there is one cell of data it is the best estimate for itself such that marginal means for the rest can be calculated (T.Terum, personal communication, September 27, 1989).

CHAPTER 4 - RESULTS AND DISCUSSIONS

A. Results

The primary purpose of this study was to compare parents who had attended an education seminar on preschool aquatics to parents who had not received such a seminar. Six hypotheses were formulated to compare the two parent groups' scores. An alpha of .05 was wet as the criterion level for rejecting the hypotheses. The findings for each hypothesis have been presented followed by a discussion of the results.

1. Child Development Knowledge

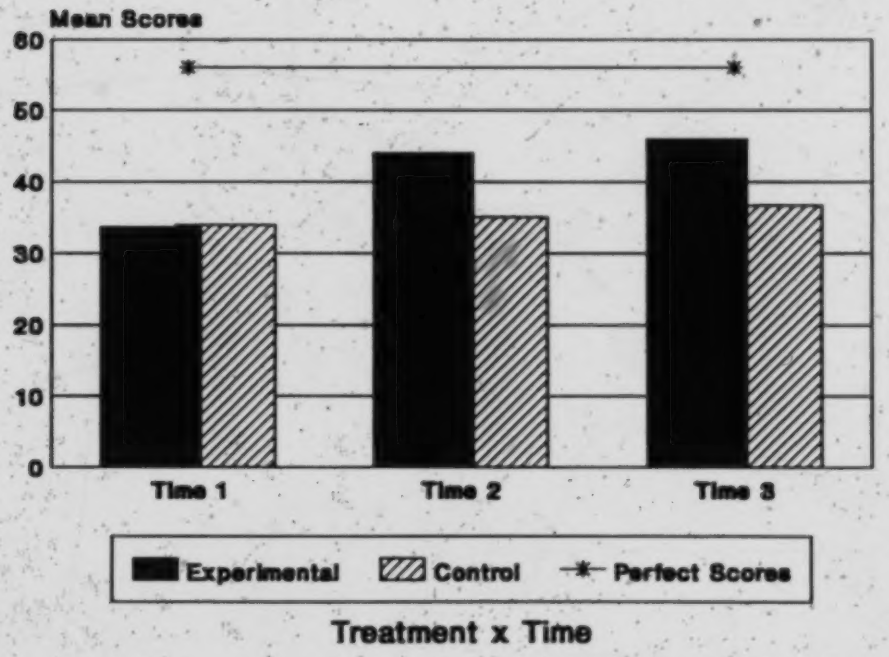
It was hypothesized that parents who participate in an education seminar would demonstrate a greater understanding of child development and the implications of development for a child's inability to learn to swim, than would parents who did not receive such training. The analysis of variance results for this data are presented in Table 3.

Significant treatment and time main effects were determined. A significant difference was also found between the experimental and control group across the three testing times (significant treatment x time interaction effect). Figure 2 illustrates the results for the two groups across the three time periods. From this graph it can be determined that both groups were similar in score at time one (experimental $M = 33.6$, $SD = 6.9$; control $M = 33.9$, $SD = 7.3$) and that the treatment groups increased, to a greater extent, over time than did the control groups. This increase in scores for the experimental group was greater

Table 3 - Summary of 2 (Treatment) x 3 (Facility) x 3 (Time) Analysis of Variance for Child Development Knowledge

Part of Model	MS	F	DF	Prob.
Treatment Effect	1196.72	10.94	1.0	0.002
Pool Effect	307.46	2.81	2.0	0.070
Treatment x Pool	145.14	1.33	2.0	0.274
M.S.E.	109.38			
Time Effect	652.16	34.54	1.7	0.000
Treatment x Time	294.56	15.60	1.7	0.000
Treatment x Pool x Time	6.00	0.32	3.4	0.834
M.S.E.	18.88			

Figure 2 - Group Mean Scores for Child Development Variable



at time two (experimental M = 44.0, SD = 2.0; control M = 35.1, SD = 7.5) than at time three (experimental M = 46.3, SD = 7.5; control M = 36.7, SD = 7.8). As there was no pool effect detected and due to the fact that there was similarity between both groups at time one, there is support for the hypothesis that the education seminar was responsible for producing the observed change.

2. Play

It was hypothesized that parents who participated in a parent education seminar should express a higher acceptance for the benefits of play as a teaching approach for children than would parents who did not receive such training. Results of the analysis on the dependent variable of play are presented in Table 4.

A significant difference was found between the experimental and control groups across the three testing times (significant treatment x time interaction effect).

Table 4 - Summary of 2 (Treatment) x 3 (Facility) x 3 (Time) Analysis of Variance for Play

Part of Model	MS	F	DF	Prob.
Treatment Effect	22.63	17.58	1.0	0.000
Pool Effect	1.49	1.16	2.0	0.323
Treatment x Pool	5.16	4.01	2.0	0.024
M.S.E.	1.29			
Time Effect	2.89	7.86	1.8	0.001
Treatment x Time	1.69	5.35	1.8	0.008
Treatment x Pool x Time	0.28	0.75	3.7	0.547
M.S.E.	0.37			

Figure 3 illustrates the results for the two groups across the three time periods. From this graph it can be determined that the treatment groups increased to a greater extreme, over time, than did the control groups. Whereas the two group scores were similar at time one (experimental M = 24.6, SD = 3.4; control M = 22.9, SD = 3.9), the experimental group's scores were greater at both time two (experimental M = 28.2, SD = 4.9; control M = 23.1, SD = 2.5) and time three (experimental M = 28.6, SD = 5.6; control M = 23.3, SD = 3.0). The control group scores remained relatively similar during all three testing times. As there was no pool main effect detected and a significant treatment x time interaction is central to the research, there is support for the hypothesis that the educational seminar was responsible for the observed change.

Significant treatment and time main effects were also determined. These effects however are qualified by the significant treatment x pool and treatment x time interaction effects. Figure 4 illustrates the results for the individual pools across the three time periods. The experimental group at Pool B differed markedly from the other groups in test 2 (respective means for pools A, B, and C = 26.5, 32.4, 26.8) and test 3 (respective means for pools A, B, and C = 27.3, 31.4, 27.3). In particular the higher mean score for Pool B experimental was most evident at time two. Play was not the only analysis to identify a significant treatment by pool interaction. This interaction effect for all variables will be discussed later (p.63-65) in this chapter.

The play scale, however, as described in chapter three, was found to be low in

Figure 3 - Group Mean Scores for Play Variable

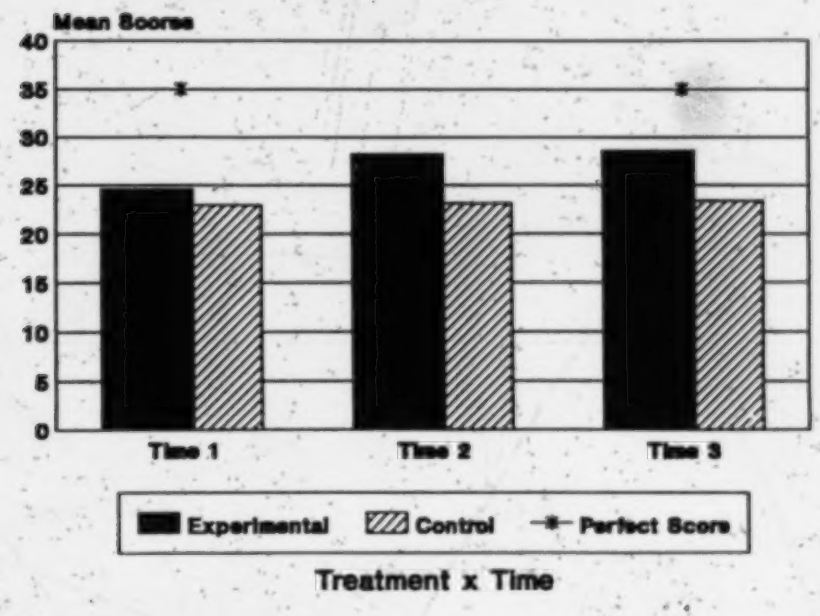
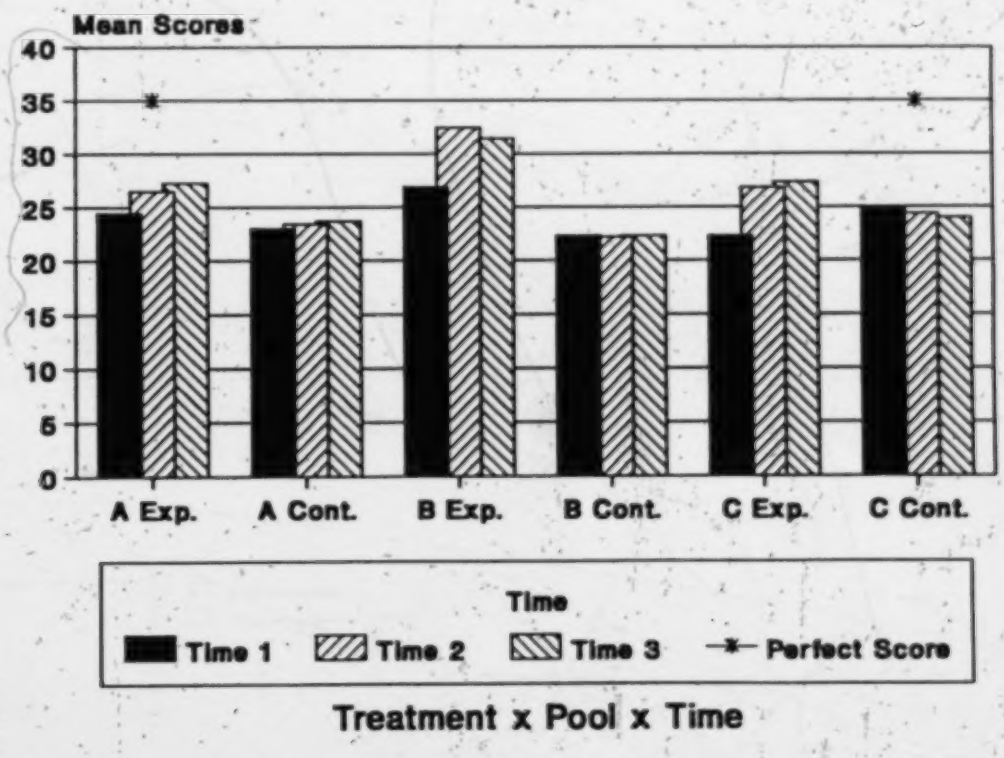


Figure 4 - Pool Mean Scores for Play Variable



reliability as determined by the Kuder Richardson Test of reliability (KR21). Therefore the results described above must be viewed with considerable caution.

3. Water Orientation

The water orientation variable was deleted from further study due to the low reliablility of the sub-scale (Refer to p. 48).

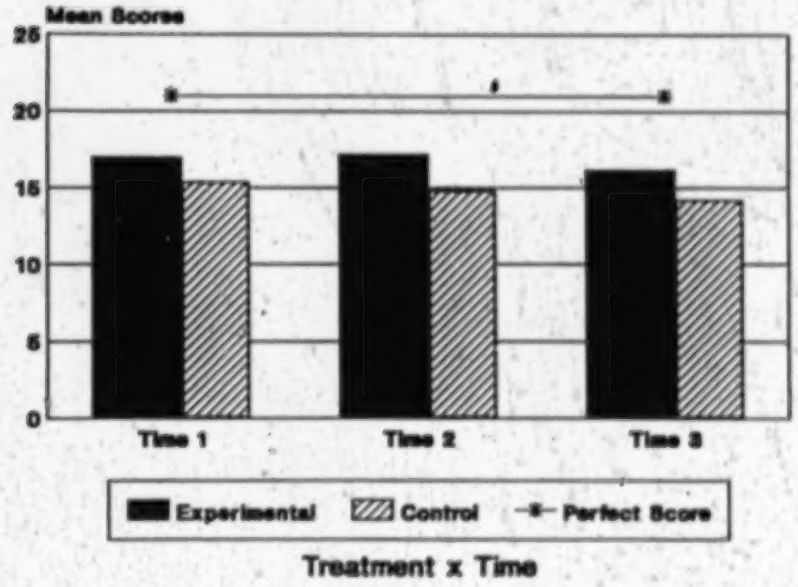
4. Parental Supplemental Information

It was hypothesized that parents who participated in a parent education seminar would express a higher level of support for parent supplemental information than would parents who did not receive such training. Results of the analysis on the dependent variable parent supplemental information are presented in Table 5. The only significant effect was a significant treatment effect. The results

Table 5 - Summary of 2 (Treatment) x 3 (Facility) x 3 (Time) Analysis of Variance for Parent Supplement Information

Part of Model	MS	F	DF	Prob.
Treatment Effect	90.65	4.15	1.0	0.047
Pool Effect	26.06	1.19	2.0	0.312
Treatment x Pool	0.23	0.01	2.0	0.989
M.S.E.	21.83			
Time Effect	6.76	1.90	1.9	0.158
Treatment x Time	5.47	1.53	1.9	0.222
Treatment x Pool x Time	6.63	1.86	3.8	0.128
M.S.E.	3.57			

Figure 5 - Group Mean Scores for Parent Supplemental Information Variable



for the control group and the experimental group are presented in graph form in Figure 5. A lack of a significant treatment by time interaction indicates a lack of support for the hypothesis that the seminar would result in greater support for parent supplemental information.

5. Parent/Instructor Roles

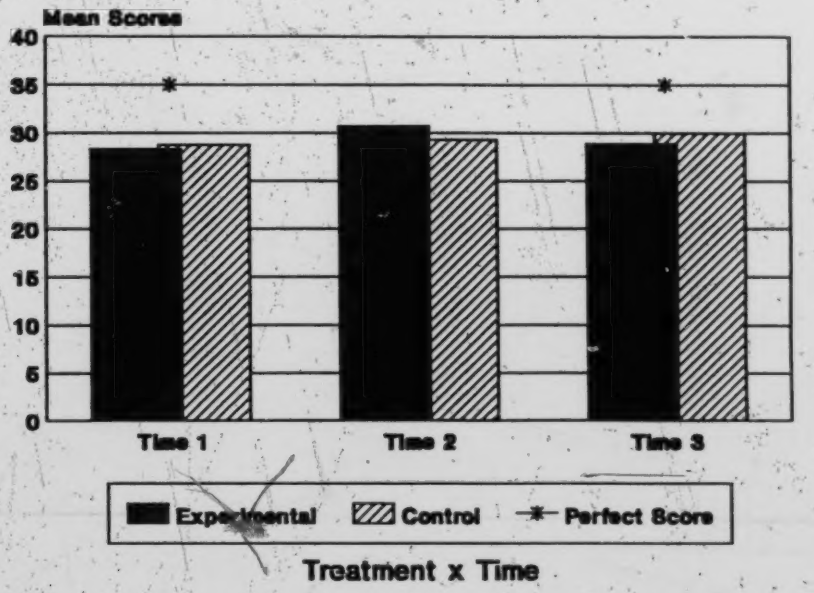
It was hypothesized that parents who participated in a parent education seminar would express a greater understanding, congruent with the focus of this program, of their role and the role of the program instructor in guiding the aquatic experience of their child than would parents who did not receive such training. Results of the analysis on the dependent variable parent/instructor role are presented in Table 6.

Table 6 - Summary of 2 (Treatment) x 3 (Facility) x 3 (Time) Analysis of Variance for Parent /Instructor Roles

Part of Model	MS	F	DF	Prob.
Treatment Effect	0.07	0.00	1.0	0.959
Pool Effect	29.44	1.16	2.0	0.320
Treatment x Pool	132.23	5.23	2.0	0.009
M.S.E.	25.28			
Time Effect	16.04	1.85	1.5	0.173
Treatment x Time	26.68	3.08	1.5	0.066
Treatment x Pool x Time	2.46	0.28	3.0	0.838
M.S.E.	8.66			

No significant differences between the experimental and control groups were observed. The treatment by time interaction effect, however, approached but did not reach the established level for statistical significance. It might be observed from Figure 6 that the experimental group scored higher at time two (experimental M = 30.7, SD = 3.6; control M = 29.2, SD = 3.2) than at time one (experimental M = 28.3, SD = 3,7) while the control group (control M = 28.8, SD = 3.3) did not. Thus, although it must be concluded that the seminar did not result in a significant increase in knowledge concerning parent and instructor roles, the trends were in the hypothesized direction. A second observation of the results in Figure 6 illustrate a decrease in score for the experimental group at time three (experimental M = 29.1, SD = 6.4) below the final score of the control group (control M = 30.0, SD = 3.1), which would indicate a drop in retention of the information presented in the

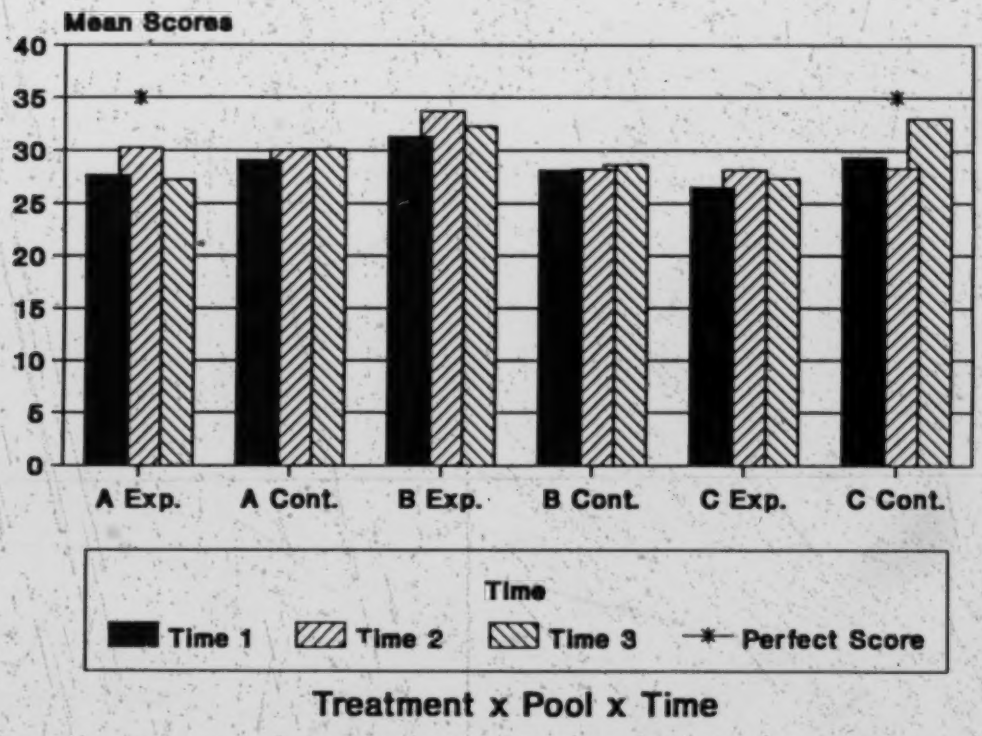
Figure 6 - Group Means for Parent/Instructor Roles Variable



seminar. Alternative explanations will be presented in the discussions section of this chapter.

The variable parent/instructor role was found to have a significant treatment by pool interaction. Figure 7 illustrates the scores by pool over time. Pool B was again found to have higher scores than did all the other pools. The parent/instructor role score for the experimental group for pool B was found to be different from all other groups at time one (respective means for pools A, B, and C = 27.7, 31.3, 26.5). These results indicate that there was a difference between the experimental and control groups at pool B. It is difficult to attribute the difference of this group at the initial test to any aspect of the study, as the group had not been exposed to any information by the time they had completed the test at time one. It would appear that a plausible explanation for the difference between this group and all the others, including the same pool's counterpart (pool B control), would be the individual

Figure 7 - Pool Mean Scores for Parent/Instructor Roles Variables



differences of the parents involved in the program. These differences will be discussed later (p.63-65) in this chapter.

6. Parent Competence

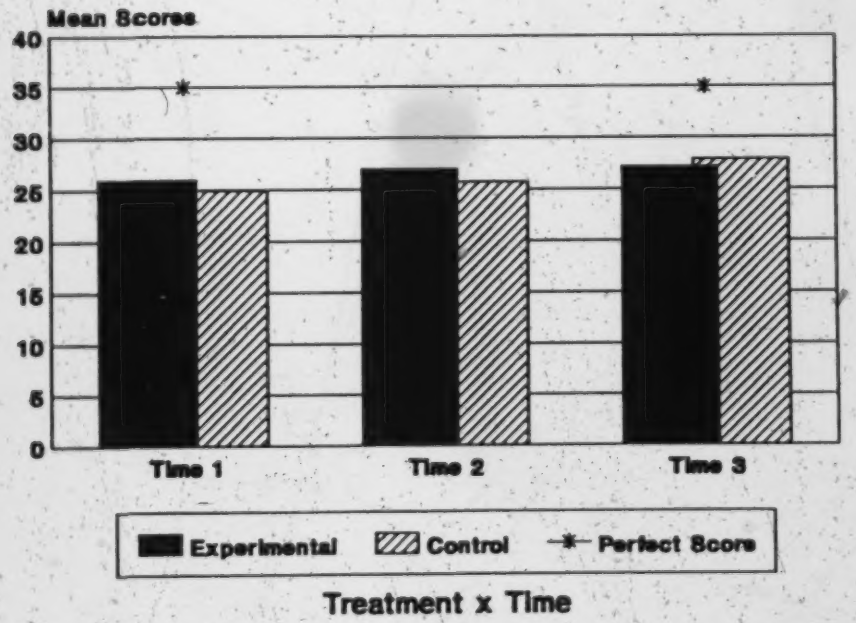
It was hypothesized that parents who participated in a parent education seminar would express greater perceived self competence in their ability to guide their children's aquatic play experience than would parents who did not receive such training. Results of the analysis on the dependent variable competence are presented in Table 7.

No significant differences between the experimental and control groups were observed. Figure 8 illustrates the scores by group over time. Both groups increased

Table 7 - Summary of 2 (Treatment) x 3 (Facility) x 3 (Time) Analysis of Variance for Competence

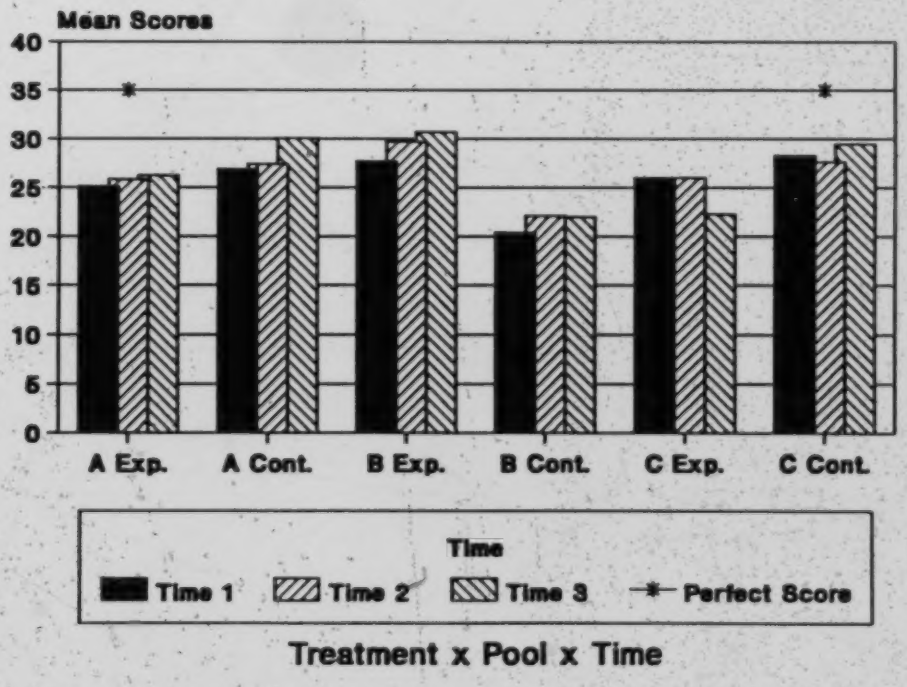
Part of Model	MS	F	DF	Prob.
Treatment Effect	9.05	0.13	1.0	0.719
Pool Effect	32.36	0.47	2.0	0.628
Treatment x Pool	430.09	6.23	2.0	0.004
M.S.E.	69.08			
Time Effect	10.24	1.32	1.8	0.270
Treatment x Time	10.83	1.40	1.8	0.252
Treatment x Pool x Time	8.08	1.04	3.6	0.386
M.S.E.	7.73			

Figure 8 - Group Means for Self Perceived Competence



minimally over time with the control group demonstrating a slightly greater increase from time one (experimental M = 26.0, SD = 5.3; control M = 25.0, SD = 6.5) to time three (experimental M = 27.3, SD = 5.9; control M = 27.9, SD = 6.1) than did the experimental group. A significant treatment by pool interaction was observed on the variable competence. Figure 9 illustrates the scores by pool over time. Pool B control was found to have lower scores than did all the other pools at all three testing times. Pool B control mean scores were: 20.4, 22.2 and 22.0, for times one to three respectively; the other pools scored consistently over 25.0 at all three test times. The exception to this observation was Pool C experimental which at time three scored a mean of 22.3, which was still higher than all of Pool B scores.

Figure 9 - Pool Mean Scores for Self Perceived Competence Variable



A discussion of the treatment by pool interactions will be presented in the following section of this chapter.

No significant treatment by time interaction was observed. Thus there was no support for the hypothesis that the seminar would result in greater perceived self competence in the parent's ability to guide their children's aquatic play experience.

Treatment By Pool Interactions

Although facilities were selected for the study so as to minimize the possible facility effects on the research results (see Chapter 3), three analyses revealed significant treatment by pool interactions. For hypotheses #2, #5 and #6 (variables play, parent/instructor roles and competence respectively) pool B experimental scored higher than all other groups.

Pool B experimental exhibited a large difference from all other groups at time one on the parent/instructor roles and play sub-scales. The difference of this group at time one cannot be attributed to any aspect of the study as the group had not been exposed to any information by the time they had completed the questionnaire at time one. It would appear that the only plausible explanation for the difference between this group and all the others, including the same pool's counterpart (pool B control), would be the individual differences of the parents involved in the program.

Strom, Griswold and Slaughter (1981), in an investigation of individual parent differences in parent education, found significant differences between socioeconomic groups. Primarily it was found that whites as compared to blacks and upper class as compared to lower class responded more in line with current child

development research. Secondly the groups who scored higher expressed a lower need to control their children and greater confidence in themselves as teachers of the child's learning experiences.

A review of the parent profile for pool B revealed that the experimental and control parents differed in two categories. The parents of the experimental group were younger (M = 31.88 years) in age than were the parents of the control group (M = 38.78 years). Secondly the parents of the experimental group had a higher level of education with 75% having achieved undergraduate university education or higher compared to the 25% of the control group achieving the same level of education. These differences may at least partially account for the observed interactions in the results of the parent/instructor roles, play and competence variables.

In the results of the variable competence pool B experimental demonstrated large differences from pool B control (Figure 9, p.62), with the control group scoring lower at all three times than any other group. These observed differences could also be attributed to the above explanation on the differences of the subjects within the pool groups. Further study which investigates the relationship between socioeconomic status and parent competence in themselves as teachers of the child's aquatic learning experiences, would greatly benefit practitioners in developing programs which meet the needs of parents.

The greater observed treatment difference on play at times two and three for Pool B (Figure 4, p.55) may be related to the difference in the seminar leader. At the onset of the study it was established that the same seminar leader would conduct

the treatment at all facilities. In the case of pool B, however circumstances arose during the implementation of the treatment where the seminar leader could not fulfil the commitment and the researcher had to complete the treatment. Differences between the two seminar leaders such as teaching styles, knowledge of the subject, personality and level of education could have affected the groups in various ways. In opposition to this point, Dembo, Sweitzer and Lauritzen (1985) found that there were no apparent differences in the effectiveness of the training based on the trainers qualifications in the studies reviewed. More research on the effects of leader influences would assist in clarifying the importance of leader qualification and training for parent education programming.

In summary, two hypotheses were supported by statistically significant results. These were that the treatment would increase parent's knowledge of child development and the benefits of play. Although not significant, there was a positive trend in the data consistent with the hypothesis that the treatment would increase parents' knowledge of instructional roles. The play results should, however, be considered with caution as the instrument was determined to have low reliability on the play sub-scale.

B. Discussion

1. Child Development

The child development knowledge scale was based on information presented in the parent education seminar. In the seminar, parents were introduced to the notion of individual "readiness" for participation in the program. The significant

treatment x time interaction effect supported the hypothesis that parents who participate in the seminar would demonstrate a greater understanding of child development and the implications of development for a child's inability to learn to swim, after treatment than would the control parents. The fact that no pool significant main effect or treatment by pool interaction effect occurred indicates that the seminar had a uniform effect across all pools in the treatment condition.

Central to the study hypothesis was the treatment by time interaction. It was predicted that the difference between the experimental group and the control group would not be uniform across time and the experimental group would demonstrate a greater increase at time two and time three, than would the control.

This finding demonstrates that the seminar was a program advantage for providing information to parents on child development and aquatic activity, over the non-seminar program. Through the review of the literature it was apparent that many authors agreed on the importance of parent supplemental education; however no research on the effects on this information could be found. Langendorfer and Hicks-Hughes (1986), in their summary of a review of 136 aquatic programs, called for an inquiry on the roles of parents in programs and the type of information that was being provided. More recently, Langendorfer (1989a,1989b) strongly advocated the implementation of parent education as a means of managing the inherent risks of preschool aquatics programming.

In the analysis it was observed that although the control group did not receive the formal seminar training, the group did receive partial information on child development in some form. Specifically the control group changed from a mean of

33.9 at time one (62.7%) to a mean of 36.7 at time three (67.9%), whereas the experimental group, who did better, changed from a mean of 33.6 (62.2%) at time one to a mean of 46.3 (85.7%) at time three. Although the control group only improved in score by 5.2% while the experimental group improved by 23.5%, it is important to discuss the implications of the change in the control group. These results could be due to the water instructor's providing the information indirectly in the daily class sessions, or they may be due to the parents' own observation of their child's progress through the program. Freeman (1975) found similar results between two parent education groups: one that had received formal training on child rearing practices and one which had received a placebo. Freeman concluded that formal training was not significantly more effective than informal discussion and that perhaps any program that encourages parents to think about their parent-child relationships could obtain its education goals regardless of presentation format.

Aquatic programmers must view both parent and child as program participants and provide the required information for their aquatic experience and growth. In 1987 the C.R.C.S. recognized the importance of parent and child readiness to participate and recommended it as an important criterion for enrolment in its first Instructor Guide to preschool aquatics (Shropshire, 1987). Programmers need to ensure that the instructors of these programs are indeed providing the parent information in some form such as a seminar (as in this study), informally (as in the control group), or through other means of communication (such as a hand out, video taped sessions, etc.). Programs which do not provide parents, at all, with the required preschool aquatic information in the areas of readiness may be creating a more negative learning experience than not providing the aquatic experience at all.

Parents who are unaware of the readiness required to learn skilled movement could become frustrated as their activities would never produce the desired movement in their child until the genetic predisposition is present (Langendorfer, 1985; 1989).

In the present study, however, results indicate an advantage of seminar training over non-seminar training. Further research is needed to determine the critical factors between formal and informal parent education sessions. Programmers and aquatic instructors must be aware of the formal and informal methods of parent education to ensure that both methods are capitalized upon to provide the best possible program for the parent and the child. Secondly, programmers must be acutely aware of the information the instructors are providing informally to the parents to insure that it is accurate information in terms of current child development literature. Implications for instructor training program content, therefore, become an issue as instructors need to be trained in the instruction of parent and preschool aquatics and the information required to be able to provide the best possible programs.

2. Play

The play scale was based on information presented in the parent education seminar. In the seminar, parents were introduced to the concept of learning through play. Play was defined as a self perpetuated activity characterized by a heightened level of cognitive processes (Atkey, 1984). The significant treatment x time interaction effect supported the hypothesis that the parents who participated in the seminar would demonstrate a greater understanding of the benefits of play as a teaching approach for children, than would the control group of parents.

National agencies have supported the play techniques of water orientation in preschool aquatics for over 14 years (Y.M.C.A., C.R.C.S., C.P.S., and C.M.A., 1976). The agencies' support for this approach has been influenced by many of the child development scholars in the areas of cognitive development (Kagan, 1984; Piaget, 1962), motor development (McGraw, 1963) and language development (Bruner, 1975, 1983; Moskowitz, 1978). This position, however, has not been without debate from the behaviour modification groups (Barnett, 1980; Diem, 1982), who utilize forceful training techniques, as opposed to free play exploration, to teach swimming skills. Only one study has attempted to empirically test the differences in the two teaching approaches (Sayre and Auxter, 1987). Its results, however, were inconclusive. Although the present study does not contribute to the closure of this debate, it does demonstrate that parent knowledge in the area of a play and preschool aquatics can be enhanced through an education seminar.

This finding is important as it emphasizes that instructors and programmers can educate the parents as to the philosophical basis of the programs, so the parents and instructors' expectations of the program are congruent. The philosophical basis of the programs can be presented to parents through a variety of means, such as direct presentation of information to parents; through informal discussions with the instructors and through role modelling by instructors. Penny (1985), in a national survey conducted by the C.R.C.S., found that parent (N = 160) expectations of preschool programs did differ from those of facility managers (N = 80) and instructors (N = 160). Facility managers and instructors suggested that water orientation was the main purpose (64.29%) while parents suggested that water orientation (44%) and skill development (30%) were both high in importance.

These findings highlight the importance of changing the parent's understanding of the philosophical basis of the programs so that expectations of the program are congruent between the program providers and the participants.

The significant treatment and time main effects, however, are qualified by the significant treatment by time interaction. The significant interaction, as previously discussed (see p. 64) could have been due to the trainer inconsistency. Canadian certification presently qualifies instructors to teach children over the age of five years and does not address the topic of parent education in preschool aquatics. Further study which investigates instructor differences and instructor influences on learners would greatly aid the field of aquatics in developing quality instructor training programs.

3. Water Orientation

The water orientation variable was deleted from further study due the low reliability of the sub-scale (Refer to p.48).

4. Parent Supplemental Information

The parent supplemental information hypothesis was based on the assumption that parents who had received the parent education seminar would develop a growing appreciation for the need for additional information throughout the program. It was believed that the control parents, not having received any supplemental information, would remain neutral in their understanding of the need for the information. In the analysis a significant treatment effect was observed. Through examination of the graphed results (Figure 5, p. 57) it is clear that the factors creating the change between the control and experimental groups were not

due to a higher score on the part of the experimental groups as was hypothesized; rather, it is the control group which scored lower on the post-test results. The experimental group remained fairly neutral across time (with the exception of pool C) on the topic of supplemental information.

A possible explanation for the control group's (and pool C experimental's) lack of support for supplemental information could be due to individual differences between the "water" instructors. Although the study attempted to decrease the extraneous variable of instructor and seminar leader differences, it was impossible to design the study with only one instructor conducting all of the programs at every pool. This would have been the most desirable situation to control for instructor differences.

It is possible that the instructor of the control groups possessed more desirable preschool aquatic skills, and therefore provided the parents with more stimulating learning environment in the water sessions than did the experimental instructors. In such a case, parents involved in a program where the instructor was providing the information may not have considered the need for supplemental information or seminars to be important as they were receiving sufficient information within their water classes. The desirable instructor skills have been defined by aquatic organizations as "a basic understanding of the physiological, psychological and social needs of young children and a warm caring attitude toward young children" (Shropshire, 1987; Y.M.C.A., C.R.C.S., C.P.S. and C.M.A., 1976). Dembo, Sweitzer and Lauritzen (1985) support the importance of instructor influence in the success of a program. In a review of 48 investigations of parent education programs, it was

found that active instructor involvement was useful in implementing a successful program. The most successful programs had instructors who became actively involved through direct instruction, role playing and/or modelling (Dembo, Sweitzer and Lauritzen, 1985). Results of the findings of the present study and the previous studies impact the area of instructor training. Instructor training programs need to address areas, such as instructor knowledge of the needs of young children; instructor presentation styles and techniques; and instructor attitude toward young children.

A second possible explanation for the significant treatment effect may be due to the control group's lack of recognition for their need for supplemental information. Although the experimental group remained fairly neutral on the scale of parent supplemental information they were, by nature of being involved in the seminar, aware of the purpose of the information. The control group however were not involved in the seminar and therefore may not necessarily have recognized the need for such information.

More research is required to determine the most successful method to present preschool aquatic information to parents. Secondly there presently exists a need for standardized content in preschool aquatic instructor training programs. Such a program should include information on early childhood development, the benefits of play to learning, the physiological, psychological and social needs of young children, and effective presentation techniques for instructors. The program should also include an opportunity for instructors to gain an understanding of the personal presentational skills their attitude toward young children.

5. Parent/Instructor Roles

The parent/instructor role hypothesis was based on the rationale that parents who had received the parent education seminar would express a greater understanding (congruent with the focus of the program) of their role and the role of the program instructor in guiding the aquatic experience of their child, than would parents who did not receive such training.

The results of the analysis indicated that the treatment by time interaction effect approached, but did not reach, the established level for significance. The trend demonstrated that the experimental groups consistently showed a greater increase at time two relative to time one than did the control groups. Penny (1985) in a national survey found that 85% of instructors (N = 110) responded that parents were actively participating in their preschool classes. In the same study 75% of parents (N = 104) stated that they actively took part in the classes by being involved in the instructional process. The study did not, however, address how instructional information was being provided to the parents.

Results of the present study support the seminar approach for educating the parents about their role initially, before the water sessions, but not the retention of that information. The experimental group, although scoring higher than the control group initially at time two (respective means for experimental and control = 30.7, 29.3), scored lower than at time three (respective means for experimental and control = 29.1, 30.0). A possible explanation of the observed change in the experimental group may have to do with the parents' work with the instructors in the water, after the classroom session. If the water instructors were not reinforcing the

information on parent roles through their presentation style, modelling techniques or the informal conversations, retention of the information provided in the seminar may have suffered. Similarly, parents may have scored higher particularly at time two because the seminar clearly and overtly presented the expectation of their roles prior to test 2, while role expectations in the water with the instructors may not have been as overt. With 85% of instructors (N = 110) and facility managers (N = 56) responding that parents are involved in the instructional process of their programs (Penny, 1985), more research must be undertaken to determine the best methods of parent education. Studies which examine the differences in effectiveness of seminars, handouts, parent discussion groups, and/or videos, would greatly assist the aquatic field in utilizing the most successful methods of parent education. Such studies should utilize a variety of data collection methods such as parent response surveys, parent behavioral observations, children behavioral observations, and instructor response surveys, to assist in gathering the entire picture of the effect of parent education in preschool aquatics.

6. Parent Competence

The parent competence hypothesis was based on the assumption that parents who had received the parent education seminar would express greater perceived self competence in their ability to guide their children's aquatic play experience than would parents who did not receive such training.

No significant treatment by time interaction was observed. Thus there was no support for the hypothesis that the seminar would result in greater perceived self competence in the parent's ability to guide their children's aquatic play experience.

The parent competence variable was introduced in an exploratory manner in this study. No previous studies investigating parent competence in preschool aquatics were found in the literature. It was proposed that, if the parents were provided information through an education seminar, they would perceive greater self competence from having received such information. A possible explanation for the negative results might be that parents already perceived themselves as high in competence with regards to preschool aquatic programs, regardless of treatment. Results of the present study indicate that parents perceived themselves as competent at time one, as the control group scored 70% (M = 25.0) of possible perfect score while the experimental scored 72% (M = 26.0) of a possible perfect competency score. Perhaps programs such as the one in this study attract parents who perceive themselves as competent with their children. Secondly, if parents had perceived themselves as relatively competent previous to participation in the program, it is plausible that they were reserved in rating themselves any higher, in the presence of perceived experts in the area of preschool aquatics. A third explanation for the observed results may be due to the instrument. The construct validity of the competence scale may be questionable and warrants further investigation.

Further study is required to investigate the relationship of parent competence and preschool aquatics for programs which involve parents as active participants in the program. Research which investigates the qualities of parents enrolled in preschool aquatics would provide a framework from which further program develop can be based. Additional forms of data collection, such as behaviour observations,

would assist in providing a clearer understanding of the effects of the seminar on parent competence.

Summary

The development and evaluation of the parent educational seminar, in this study was valuable to the field of aquatics for four reasons:

1) The educational seminar was the first attempt at drawing together the joint agreement principles of Y.M.C.A., C.R.C.S., C.P.S., and C.M.A.(1976), and creating a measure of information for parents of preschool children.

2) The information within the educational seminar may be valuable to organizations who are responsible for the training of instructors. Presently instructors are trained and certified to teach children six years of age and older (Belanger and McCulloch, 1983).

3) The present experimental investigation is a foundation to possible further scientific study in a field which is based largely on beliefs and experience rather than scientific research.

4) The present study is valuable in that it provided an evaluation tool from which to measure parent educational programs in aquatics. Further refinement of the questionnaire is required.

CHAPTER 5 - SUMMARY AND CONCLUSIONS

The Problem

The purpose of this study was to develop a parent education seminar and to field test its impact on parents involved in preschool aquatic programs. The education seminar was a pre-program session based on the Y.M.C.A.,C.R.C.S.,C.P.S. and C.M.A., (1976) joint policy statement on "Water Activity for Young Children" and current relevant childhood literature. The program consisted of two 45 minute seminar sessions held on two consecutive weekdays prior to commencement of the water sessions. The seminar content included program goals, objectives, preschool principles and relevant early childhood development literature. The purposes of the education seminar were:

1. To teach parents how to facilitate the preschool aquatic experience for their child.

2. To bring parents' expectations, knowledge, and competence in line with:
   i) the early childhood research
   ii) the preschool aquatic program goals and objectives.
   iii) the Y.M.C.A.,C.R.C.S.,C.P.S. and C.M.A., joint policy statement (1976) promoting safe, enjoyable aquatics through a water play orientation.

A need for the educational seminar was identified due to three circumstances. A growing interest in preschool aquatics had been identified by programmers in the field and many facilities were offering such programs. Hick-Hughes and

Langendorfer (1986) in a study of 139 facilities found that over 90% offered programs to young children up to 6 years of age. A second concern in the area of preschool aquatics was the lack of instructor training. The present training offered to instructors in Canada only qualifies them to instruct children six years of age and older (Belanger and McCulloch, 1983). Instructors presently teaching the programs must find other means to supplement their training to include preschool children. Finally, the review of the current literature demonstrated that although many researchers and practitioners advocate the inclusion of parents in preschool aquatic programming, little research existed on the provisions for delivery of parent information and its effects on the participants.

Procedures

The experimental design selected for the study was a 2 (treatment) x 3 (time) x 3 (facility) repeated measures design, in which 57 volunteer program registrants (54 females and 3 males) were nested within a treatment group at three facilities. Each subject registered in a program at a facility, which was then assigned to either an experimental or control treatment. The subjects were tested three times, on a questionnaire, during the first, second and final day of the program. The treatment consisted of two-45 minute sessions held on two consecutive days prior to commencement of the regular program. The instrument, a questionnaire made up of seven point Likert type scales, measured parents' responses on the dependent variables: Child Development, Play, Water Orientation, Parent Supplemental Information, Parent/Instructor Roles and Competence.

Kuder Richardson tests of reliability were used to determine the reliability of the test instrument sub-scales. The play scale, which was determined to be low in reliability was subjected to an item analysis on the basis of which one item was removed due to poor internal consistency. The water orientation sub-scale, which was found to be very low in reliability was deleted from the study as it had only three items and a scale of adequate reliability could not be derived. The data was analyzed by a multivariate analysis of variance (MANOVA).

Results

In summary the following results were obtained.

Hypothesis 1: Parents who participate in an education seminar would demonstrate a greater understanding of child development and the implications of development for a child's inability to learn to swim.

- The hypothesis was supported by a significant treatment by time interaction. Parents involved in the seminar improved significantly more over time subsequent to the pretest than did the control group. This improvement was observed both directly after the seminar (time two) and at the end of the water sessions (time three).

Hypothesis 2: Parents who participated in a parent education seminar would express a higher acceptance for the benefits of play as a teaching approach for children.

- This hypothesis was also supported by a significant treatment by time interaction. Parents involved in the seminar improved significantly more over time than did the control group.

This improvement was observed both directly after the seminar (time two) and at the end of the water sessions (time three). These results should be viewed with caution, however, as the play sub-scale was found to have low reliability (see p.48).

Hypothesis 3: The water orientation variable was deleted from the study. (Refer to page 48).

Hypothesis 4: Parents who participated in a parent education seminar would express a higher level of support for supplemental parent education information.

- The Hypothesis was not supported. A lack of a significant treatment by time interaction indicated that the seminar did not result in greater support for parent supplemental information.

Hypothesis 5: Parents who participated in a parent education seminar would express a greater understanding, congruent with the focus of this program, of their role and the role of the program instructor in guiding the aquatic experienceof their child.

- The hypothesis was not supported by a statistically significant treatment by time interaction. There was a trend in the hypothesized direction however, with the treatment groups evidencing greater increases on time 2 than did the control group.

Hypothesis 6: Parents who participated in a parent education seminar would express greater perceived self competence in their ability to guide their children's aquatic play experience.

- The hypothesis was not supported. There was no evidence that the seminar had any consistent effect on perceived competence.

Conclusions

The findings suggest that child development and play information when included as part of a preschool aquatic program changes parent knowledge. The seminar was found to be a program advantage, in improving parent knowledge, as compared to the control "water sessions" program. Two primary benefits of this study to the field of aquatics were outlined in Chapter One. It is important to review these in light of the final results.

The first benefit was to provide a parent education seminar which is based on current early childhood literature. The seminar, presented as the treatment in this study, did change parent knowledge in the area of child development and the benefits of play to learning. The study also demonstrated that the formal seminar was more successful than the informal control group sessions with respect to these variables. Although the seminar presently consists of current child development literature which is accessible to the field of aquatics, the information must be updated to remain effective. Regular revisions and new editions of the information in the seminar must be conducted. The seminar might be further improved through research to investigate the effectiveness of various methods of presenting the

information. Comparative studies of different methods might include the effectiveness of parent discussion groups, printed literature, video taping, or experiential learning activities.

The second benefit was to provide an evaluation tool for measuring parent education program effectiveness so that future improvements in programming could be made. The measurement instrument in the present study proved to be reliable in four of the six sub-scales. Research which would investigate and strengthen the sub-scale for water orientation would assist in determining the effect of the present seminar on this variable. Further refinement to the instrument is necessary to enable researchers to acquire more accurate results. Refinement of the instrument could include more questions on those variables with few items. Further refinement might also include more item analysis to produce more reliable and valued sub-scales.

This study has shown that a parent education seminar for parents involved in a preschool aquatic program can improve the parents' understanding of child development and the benefits of play and how these affect the child's ability to participate in a preschool aquatic program. These results support the feasibility of incorporating parent education information into a preschool aquatic program. This result is important as Penny (1985) found that parents and programmers did not necessarily have the same reasons for involvement in parent and preschool programming. Programs that properly support the parents with supplemental information can significantly improve the parents' knowledge about their children and their aquatic experience.

Recommendations for Further Research

1. This study demonstrated that the formal seminar was more successful than the informal control group sessions with respect to the knowledge of child development and the implications of play for development. In addition, there was a strong trend (although not statistically significant) demonstrating a movement towards change in parents understanding of the are of parent/instructor roles. This change was evident in the experimental group directly after involvement in the seminar, although this increase decreased by the end of the water sessions. Further study of the effects of the informal instruction by the instructors in the water, is required to determine the effect they may have on the retention of the parent/instructor roles information. Results of the study also indicate that parents involved in the control group received information which lead to changes in certain variables.

2. The present study presented the parent information in the form of a classroom seminar where parents were encouraged to discuss their child's aquatic experience in relation to the information in the film "Trust in the Water". This interactive type of presentation is only one method of meeting the learning styles and needs of the individual participants. Future research should investigate the use of a variety of styles of presentation to examine the effectiveness of meeting the different needs of the adult learners. Suggested program presentation formats for future investigation might include open parent discussion groups, printed literature, behavioral video taping, or experiential learning activities.

3. The results of the study indicated that there was a pool influence which affected the results for some of the variables. Possible extraneous

variables identified in the present study were the differences between subject groups, the seminar leaders and the water session instructors. Further studies which investigate the relationships of these variables would provide a greater understanding of the items that influence parents in preschool aquatic programs. Such studies should utilize a variety of data collection methods such as parent response surveys, parent behavioral observations, children behavioral observations, and instructor response surveys, to assist in gathering the entire picture of the effect of parent education in preschool aquatics.

4. Studies that investigate the differences between groups and the success of parent education programs are needed to assist programmers in tailoring programs to meet the needs of parents enroled in preschool aquatic classes. Studies which investigate the characteristics of parents enroled in preschool aquatics to those not enroled in such programs, might provide valuable information on the types of parents who are attracted to such programs.

5. Finally, research is also needed to determine the effects of leader influences on parent education, so that leader training guidelines can be designed to clearly meet the needs of parents involved in the seminars. Instructor training in Canada presently provides certification for the instructing of children six years of age and older. New programs in instructor training which address the areas of instructor knowledge in terms of the needs of young children; instructor presentation styles and techniques; and instructor attitudes towards young children, would greatly aid in the advancement of a quickly growing field.

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APPENDIX A

The Test Instrument

Parent Views on Preschool Aquatics

Name: _
Pool: _
Class Time: _
Instructor: _

Preschool aquatics, for our purpose, is defined as programs for children under the age of four years which includes parents as part of the program. While it is true that four and five year olds are preschoolers we have chosen to leave them out of our group of children for this questionnaire.

Thank you for taking the time to complete this questionnaire. Your answers to all questions are appreciated and will remain confidential.

As a parent, what are the three most important reasons why you want your child to participate in this program?

Most Important: _

Second: _

Third: _

The following statements may or may not describe your opinions about preschool aquatics. Please indicate how well the statement describes your opinion by circling an appropriate number. A circle around #1 indicates that you very strongly agree with the statement, while a circle around #7 indicates that you very strongly disagree with the statement. Remember that there are no right or wrong answers. A section for comments has been provided if you wish to elaborate or explain your answer. Please use the opinion scale indicated below:

Very Strongly Agree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Very Strongly Disagree
1	2	3	4	5	6	7

To what extent do you agree or disagree with the following statements?

1. The main purpose of this preschool aquatics program is to teach the child skills that lead to swimming.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

2. It is important that involved parents receive supplemented information on child development in a preschool aquatic program such as this one.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

3. A major reason for parent involvement in this preschool aquatic program is for parents to provide the necessary encouragement and safety supervision to their child.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

4. Most children under the age of four years are not physically able to learn mature swimming skills, such as strokes.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

5. Children under the age of four learn best when instructors provide clearly structured tasks for them to follow.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

6. Water safety for children is the only information required by a parent enrolled in this preschool program.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

7. A major objective of this preschool program is to allow the child to explore and experiment in water.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

8. Face submersions controlled by the parent help to teach children under the age of four breath control skills that will assist them in case of accidental submersion.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

9. Children under the age of four can learn skills that will make them safe around natural bodies of water (lakes, rivers, etc.) and swimming pools.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

10. Infants are considered to be ready to participate in a preschool aquatic program when they are able to support themselves in a sitting position.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments: _____

_____

---

11. Children under the age of four years learn very effectively through play activities.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments: _____

_____

---

12. Preschool aquatic instruction is best given primarily to parents who then guide their child's activity.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments: _____

_____

---

13. A child under the age of four should never be forced to submerge his/her face; rather, activities such as submersion should be child initiated.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

14. Children under the age of four are not capable of learning skills that will make them safe around the water.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

15. It is important that the instructor of preschool classes have an understanding of the physiological, psychological and social need of children in order to teach properly.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

16. Children under the age of four can be drownproofed by teaching them to paddle to the surface and float on their back.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

17. Children under the age of four who are forcibly submerged are likely to ingest too much water.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

18. Parents need to guide their children's learning experiences and play is the main teaching approach to be used for children under the age of four years.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

19. An important criteria for determining when to participate in a preschool program is for both the parent and the child to be emotionally ready.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

20. It is important that parents of preschool children learn water safety as part of this preschool program.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

21. The primary purpose of this preschool aquatic program is to give the child an enjoyable introduction to water as a place to play.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

22. There is no such thing as a water safe preschool child.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

23. Children between the ages of 1 - 4 years have a natural swimming instinct.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

24. The primary purpose for the involvement of parents in a preschool aquatics program is to guide their child's learning.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

---

25. It is not important that the instructors of preschool aquatics classes know how to set up play activities as long as they can teach swimming skills.

Very Strongly Agree						Very Strongly Disagree
1	2	3	4	5	6	7

Comments:_____

_____

The following statements refer to how competent you believe you are to participate in different aspects of the preschool program. Please circle the appropriate number to indicate how well the statements describe your feelings. Remember that there are no right or wrong answers. The best answer is the one that best indicates your general views about your competence in preschool aquatics.

26. In general how competent do you feel in selecting the next swimming progression or activity for your child to work on after he/she has successfully completed a previous one?

Not Very Competent						Quite Competent
1	2	3	4	5	6	7

Comments:_____

_____

---

27. In general, how comfortable do you feel in evaluating your child's present swimming ability?

Not Very Comfortable						Quite Comfortable
1	2	3	4	5	6	7

Comments:_____

_____

---

28. Without consulting the instructor, how competent in general would you feel in evaluating your child's performance on a specific task?

Not Very Competent						Quite Competent
1	2	3	4	5	6	7

Comments:_____

_____

---

29. In general, how competent do you feel in substituting one activity that has not been working with your child, with one that will result in desired learning outcome?

Not Very Competent						Quite Competent
1	2	3	4	5	6	7

Comments:_____

_____

---

30. In general, how competent do you feel in leading your child through a water orientation program?

Not Very Competent						Quite Competent
1	2	3	4	5	6	7

Comments:_____

_____

THANK YOU FOR TAKING THE TIME

TO FILL OUT THIS QUESTIONNAIRE.

APPENDIX B

Parent Educational Seminar

Parent

Educational

Seminar

The Canadian Red Cross Society
The University of Alberta
The City of Edmonton

PARENT EDUCATIONAL SEMINAR

Video Review - Stop Discussion Method

The video "Trust in the Water" will be reviewed by the group. The review will consist of a stop tape and discussion presentation method where designated scenes and audio will be utilized to present the information. The conductor will present support material where applicable. The following is the content and flow of the seminar - Stop Discussion Video Review. The seminar conductor will ensure that all content is covered during the discussions.

Topic 1. - Preschool Aquatic Program Objectives . . . . . .

Discussion-Content

Clip 283 - 289

"Preschool aquatics programs like the one you have joined have been created so that you and your children can begin a trusting partnership in the water."

- Focus of the program is to provide an enjoyable introduction to the aquatic environment.
- This orientation encourages the child to explore and experiment with the water.
- Water Activity should be used to enrich the child's life experiences.
- These pleasant introductions are critical in developing a child's confidence.
- The child should be the one who chooses whether or not to participate. The activities should be child initiated.
- These experiences must be free of force, compulsion, punishment or threat.
- The Canadian Red Cross Society does not advocate forced submersion. Children are not to be forcibly submerged by a parent. Any submersions are to be initiated by the child.

Discussion-Content

Clip 75 - 96

"Children love to imitate, it's one way they learn, for ex-

- Forced submersion are contrary to the principles of an enjoyable orientation to the aquatic environment.
- Forced submersions may lead the child to be anxious about water activity, decrease the enjoyment of the pro-

ample, how to expel air from their lungs long before they know what their lungs are.

By picking up such cues this child will eventually put her face under the water as part of another brief and happy bubble blowing game. But learning is not just imitation. Every now and then your child will make a new discovery. These are the moments when she takes the leading role, they are valuable cues in a complex learning process."

gram and most importantly disrupt the trust relationship with the parent.

- Forced submersions may also result in increased ingesting of water although involuntary submersions are not necessarily associated with water intoxication (hyponatremia).
- There is no scientific evidence to support the claim that forced submersion produces significant advantages in case of accidential submersion.

Topic 2. Play and Learning . . . . . .

Discussion-Content

Clip 228 - 255

"Children learn best when they are ready to learn. Familiar game activities like playing with dolls, or a chance to play with grown up toys, like the diving mask, help children explore the new environment of the swimming pool in their own way and in their own time."

- Play is the principle way through which children learn.
- Play allows children (and adults) to try things, experiment and explore their environment.
- It is a relaxed atmosphere where the child is in control and not overwhelmed by adult restrictions.
- Play is the "business" of children - Jerome Bruner (1975).
- Safe play is the approach parents and instructors should take in introducing young children to the water, attempts at instruction are not appropriate.

OVERHEAD #2 - Characteristics of play - Garvey (1977)

- pleasant and enjoyable
- done for its own sake (intrinsic)
- chosen by the player
- active participation by the player
- play must be free of external force, criticism, fear of failure and other punishing conditions

Topic 3 - The "Water Safe" Child Fallacy . . . . . .

Clip 274 - 283

"Some people argue that babies like these can learn how to swim, but the 'water-safe baby' is a myth. Young children lack the memory, the muscles and the motor skills for true swimming."

Discussion-Content

- Ask parents how many were surprised at this statement.
- No person, regardless of age or skill level can be considered watersafe can they?
- When a child learns to walk it makes sense that the young child isn't "safe" to walk everywhere, ie: across the street. The same is true in aquatics.
- The prime responsibility for the safety of the child remains with the parent whether the child can swim or not.(OVERHEAD 3)
- Some argue that children who have been exposed to the pleasures of water play are often "less water safe" as water becomes an attraction.
- Parent involvement is a critical component of the preschool aquatic program.

The Swimming Reflex

- The existance of a swimming reflex was demonstrated over 50 years ago by Myrtle McGraw. This activity is an involuntary movement that is lost after the first 3 to 6 months much like other infant reflexes.
- These movements are not swimming in the actual sense of the word as swimming consists of voluntary purposeful movements of the extremities which produce intentional progressive movement through the water.
- Young infants possess an involuntary reflex which resembles a swimming action but there is no such thing as a natural swimming instinct.

Topic 4. The Role of the Trusted Parent . . . . . .

Discussion-Content

Clip 228 - 235

Clip of a parent working together with a child.

- Roles of a Parent in parent and child program:

a) It is the parents responsibility to ensure the personal safety of their child.

b) It is the parents role to be the guider of the water experiences between themselves and their child.

With children in the parent and child programs instruction is given primarily to the parent.

Children under the age of three are not capable of participating with peers under the supervison of a qualified Water Safety Instructor. Direct instruction, in the normal sense, is not suitable for this age group.

c) It is the parents' role to provide emotional encouragement and physical support to the child.

- In order to fulfill the above role responsibilies, parents need to have a good understanding of the program aims, relevant information on child development and appropriate safety and health information.

Topic 5. Understanding Child Development . . . . . .

Discussion-content

Clip 168 - 176

"We are all unique in the rate at which our bodies develop. Our limbs take many years to grow fully, just like our mental capacities and our emotions."

- Children are not miniature adults.They are very different from adults.

Overhead 4

- The head of a new born is 1/4 the size of the body, the head of an adult is 1/7 the length of the body.
- Normal development is gradual and orderly but varies greatly in timing and degree between individuals.
- Physical development follows similiar and predictable stages but the age at which a child enters a stage or the length of time at that stage is not predictable. Stages are relatively predictable - ages and pace are not.

Overhead 5 - Motor developmental stages of learning to walk.

- *Remember to highlight that the stages of learning to walk are predictable but age entry and duration is not. Ask parents to reflect on when their child creeped, crawled and walked. Demonstrate from class different ages and durations at these stages.*
- It is important to note that although physical development is not reversible, other kinds of development are reversible. Stages in language, social and motor development are not as distinct as physical development. They may overlap, be reversible and more than one stage may be observed at the same time (Smith, 1986).
- What Affects Development?
    1. Maturation: The biological changes that occur within all children which arise from the genes.
    2. Environment: The conditions under which the child grows.
- Practice and exercise are limited by maturation and the child must be prepared "biologically" to learn. Maturation transcends skill development and growth, it must be present first. (Kagan, 1984).
- If the child is ready to learn the skill then environmental influences modify both the pace and quality of development.

Overhead 6 - Developmental Stages of Throwing Skill

- Skill development evolves from a primative, inaccurate and incomplete form.
- Adults often err in expecting new learners to perform a skill at the mature level. A child cannot, in the first stage, be taught to throw in the same way a skilled person does.
- A child cannot help having to develop slowly through the stages from a primative, to a less primative and finally to a skilled level through much playful practice.
- Parents need to remember play practice with the child in the primative

stages and help guide the child slowly through the stages by encouraging and gently directing while being aware of the childs' limitations and not comparing the childs' skill to that of the mature adult level.

- Imagine criticizing a child at stage one (of overhead) for not using his legs and shoulders in a throw and not continuing with a follow through.
- Parents must instead allow children to make errors suitable to his stage while being encouraging and supportive during playful practice.

Topic 6. The Role of the Instructor . . . . . .

Discussion-Content

Clip 176 - 187

"The C.R.C.S. supports you in your decision to take to the water with your little one. As an international organization with your safety at heart, we want you both to get the very best possible from these first aquatic experiences together."

- As it is the parents' role to guide the water experience between themselves and the child, it is the instructors role to be the guide-helper or facilitater to the parent.
- The preschool instructor does not act in the normal sense of the word that is used in more structured "teacher-student" settings. Rather the instructor is a resource for the parent.
- It is important that instructors possess a basic understanding of the needs of preschool children, that instructors of such progress have a warm caring attitude toward preschool children and that they know how to arrange safe enjoyable settings for play and exploration.

Topic 7. Medical Concerns

Discussion-Content

- As children develop and enter stages of development at different rates, there is no recommended starting age for a preschool child to begin in a water orientation program.
- It is the parent and child readiness to participate in an aquatic orientation program that is important when deciding to enroll in such sessions.

- There is also no evidence, contrary to some individual claims, that water activity presents any unusual risks to health.
- It is the parents' responsibility to monitor the childs' health during participation and to seek medical advice if deemed necessary.

Topic 8. Parent Information . . . . . .

Discussion-Content

- Due to the nature of the preschool aquatic program and the valuable role parents play in such a program, Parent Information sessions such as the one you have partcipated in are considered crucial for parents. It is hoped that you have received helpful information on the program aims, the role you must play, child development and its effect on aquatic learning as well as appropriate safety and health information.

Appendix C

Group Means and Standard Deviations

for Dependant Variables

Group Means and Standard Deviations for Dependant Variables

	Time 1		Time 2		Time 3	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Development						
Exp.	33.6	(6.9)	44.0	(7.0)	46.3	(7.5)
Cont.	33.9	(7.3)	35.1	(7.5)	36.7	(7.8)
Play						
Exp.	24.6	(3.4)	28.2	(4.9)	28.6	(5.6)
Cont.	22.9	(3.9)	23.1	(2.5)	23.3	(3.0)
Orientation						
	Deleted From Study					
Parent Supplemental Info.						
Exp.	17.0	(2.7)	17.2	(2.4)	16.3	(3.6)
Cont.	15.4	(3.1)	14.8	(3.3)	14.2	(3.8)
Parent/Instructor Roles						
Exp.	28.3	(3.7)	30.7	(3.6)	29.1	(6.5)
Cont.	28.8	(3.3)	29.3	(3.2)	30.0	(3.1)
Competence						
Exp.	26.0	(5.3)	27.0	(5.1)	27.2	(5.9)
Cont.	25.0	(6.7)	25.8	(5.6)	27.9	(6.1)

Appendix D

Group Means and Standard Deviations

for Subscale Items

Group Means and Standard Deviations for Subscale Items

Knowledge Subscale

	Time 1		Time 2		Time 3	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Question #4						
Exp.	4.7	(1.7)	5.8	(1.4)	6.3	(1.1)
Cont.	5.1	(1.7)	4.8	(1.8)	5.3	(1.3)
Question #9						
Exp.	3.9	(1.7)	5.6	(1.5)	5.9	(1.8)
Cont.	3.4	(1.9)	4.0	(2.0)	4.6	(1.9)
Question #10						
Exp.	4.0	(1.3)	4.5	(1.4)	4.8	(1.8)
Cont.	3.6	(1.9)	3.5	(2.0)	3.2	(1.9)
Question #14						
Exp.	3.5	(1.6)	5.3	(1.7)	5.9	(1.4)
Cont.	3.3	(1.7)	4.5	(1.9)	4.3	(2.0)
Question #16						
Exp.	3.6	(1.6)	5.3	(1.4)	5.8	(1.4)
Cont.	3.2	(1.8)	3.6	(1.8)	3.7	(1.6)
Question #19						
Exp.	5.7	(1.0)	6.1	(1.0)	6.0	(1.1)
Cont.	5.8	(1.5)	5.6	(1.3)	5.8	(1.6)
Question #22						
Exp.	4.5	(1.8)	6.0	(1.5)	6.4	(1.0)
Cont.	5.5	(1.8)	5.3	(1.9)	5.4	(2.0)
Question #23						
Exp.	3.7	(1.0)	5.4	(1.6)	5.3	(1.7)
Cont.	4.1	(1.5)	3.7	(1.5)	4.3	(1.9)

Play Subscale

	Time 1		Time 2		Time 3	
	Mean	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**
Question #5						
Exp.	3.9	(1.7)	5.0	(1.4)	4.8	(1.9)
Cont.	3.4	(2.0)	3.5	(1.8)	3.3	(1.9)
Question #11						
Exp.	6.0	(1.0)	6.2	(1.2)	6.2	(1.6)
Cont.	6.4	(0.8)	6.5	(0.7)	6.7	(0.6)
Question #18						
Exp.	5.0	(1.0)	6.2	(0.9)	6.2	(1.4)
Cont.	5.9	(1.5)	6.5	(0.8)	6.7	(0.7)
Question #8						
Exp.	3.0	(1.5)	4.9	(1.8)	5.5	(1.7)
Cont.	2.3	(1.7)	2.3	(1.3)	2.6	(1.6)
Question #13						
Exp.	5.7	(1.4)	5.6	(1.4)	6.0	(1.3)
Cont.	4.9	(2.2)	4.4	(2.1)	4.2	(2.2)
Question #17						

Item Was Deleted From Analysis

Water Orientation Subscale

Scale deleted from analysis due to low reliability

Parent Supplemental Information Subscale

	Time 1		Time 2		Time 3	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Question #2						
Exp.	5.6	(1.3)	6.0	(1.1)	5.3	(1.6)
Cont.	5.5	(1.3)	5.3	(1.3)	4.7	(1.6)
Question #16						
Exp.	5.1	(1.4)	5.3	(1.4)	5.1	(1.6)
Cont.	4.5	(1.8)	4.2	(1.7)	4.3	(1.5)
Question #21						
Exp.	5.4	(1.7)	6.0	(1.1)	6.0	(1.3)
Cont.	6.0	(1.2)	6.0	(1.3)	6.0	(1.3)

Parent Instructor Roles Subscale

	Time 1		Time 2		Time 3	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Question #3						
Exp.	6.0	(1.1)	6.6	(0.6)	6.3	(1.3)
Cont.	6.4	(0.8)	6.3	(0.7)	6.3	(0.8)
Question #12						
Exp.	5.1	(1.3)	6.0	(0.7)	5.7	(1.7)
Cont.	5.3	(1.1)	5.6	(1.4)	5.7	(1.3)
Question #15						
Exp.	6.0	(1.2)	5.8	(1.4)	5.9	(1.5)
Cont.	5.9	(1.2)	5.8	(1.3)	5.8	(1.4)
Question #25						
Exp.	5.6	(1.3)	6.3	(1.0)	5.6	(1.8)
Cont.	5.4	(1.7)	5.7	(1.2)	5.8	(1.2)
Question #24						
Exp.	5.6	(1.1)	6.0	(1.0)	5.7	(1.5)
Cont.	5.8	(1.0)	5.8	(1.4)	6.3	(1.0)

Competence Subscale

	Time 1		Time 2		Time 3	
	Mean	(S.D.)	Mean	(S.D.)	Mean	(S.D.)
Question #25						
Exp.	5.6	(1.3)	6.3	(1.0)	5.6	(1.8)
Cont.	5.4	(1.7)	5.7	(1.2)	5.8	(1.2)
Question #26						
Exp.	5.1	(1.8)	5.2	(1.4)	5.6	(1.6)
Cont.	4.7	(1.9)	5.0	(1.5)	5.5	(1.7)
Question #27						
Exp.	5.1	(1.6)	5.4	(1.3)	5.1	(1.7)
Cont.	5.2	(1.6)	5.1	(1.6)	5.8	(1.2)
Question #28						
Exp.	4.7	(1.6)	5.1	(1.3)	5.3	(1.5)
Cont.	5.0	(1.6)	5.2	(1.3)	5.6	(1.3)
Question #29						
Exp.	5.3	(1.4)	5.4	(1.7)	5.4	(1.6)
Cont.	4.9	(1.6)	5.0	(1.4)	5.4	(1.5)
Question #30						
Exp.	5.8	(1.2)	5.9	(1.3)	6.0	(1.1)
Cont.	5.1	(1.9)	5.4	(1.5)	5.6	(1.7)